PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 1

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

**DEXTER TOWNSHIP, MI SEPTEMBER 21, 2016**

Pulse Broadband LLC has been engaged by Dexter 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 Dexter 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 98.5 for the entire Township and 35.5 miles for the “unserved” areas of Dexter 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 Dexter 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 $3.3 million to $8.8 million. A detailed description of underground costs is included in the body of the report. 4. ISP partner. Our model projects total costs of approximately $894,000 for an ISP serving the entire Township vs $551,000 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 Dexter 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 17751 N. Territorial Road Chelsea, MI 48118 and 5665 Webster Church Road Dexter, MI 48130.

The top quote received for Dexter 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 Dexter Township, Figure 1.

Dexter 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 Dexter 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 Dexter indicating the areas they serve. Dexter 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 kept to a minimum and only necessary to reach unserved

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*Figure 1. WCRC Road Information*

areas. The results of this analysis produced a construction path and fiber mileage less than Dexter’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 Dexter Township and for construction of unserved areas only.

**FIBER MILEAGE** Entire Area of Dexter Township 98.5 miles Unserved Areas Only 35.5 miles

HOMES SERVED Another critical piece of data that drives the financial model is number of homes served. According to census.gov, the number of households within Dexter Township is 2,612. Dexter instructed Pulse to analyze model iterations excluding those households currently being served by Charter. Pulse was supplied a map indicating which roads and areas were served by Charter, however, not an actual household number.

Therefore, Pulse used parcel information from census.gov along with the road maps for Charter, to estimate the number of served and unserved homes in Dexter Township. According to the parcel shapefile, there are 3,760 parcels in Dexter Township. If we compare the total number of parcels (3,760) to the total number of households (2,612), it tells us approximately 69.5% of parcels are occupied. Next, Pulse highlighted all parcels which fell along roads that were indicated as served by Charter. The value of served parcels is 2,698. By subtracting served parcels (2,698) from total parcels (3,760), the total unserved parcels are 1,062. If we estimate 69.5% of these parcels are occupied, the total number of unserved households is 738.

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**Served and Unserved Households** Households 2,612 Parcels 3,760 Ratio Occupied Parcels 69.5% (2,612/3,760)

Served Parcels 2,698 Unserved Parcels 1,062 (3,760-2,698) Occupied Unserved Parcels 738 (1,062\*69.5%)

For the financial model, we assumed take rates for the 738 unserved homes at 50% and the 1,874 served homes at 30%.

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 Dexter builds the entire 2,600 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 Dexter 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:

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*Figure 4. Parcels within served areas of Charter*

**Total Project Costs – Model Comparison**

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

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

Miles 98.5 98.5 59.25 59.25

Homes 2,612 2,612 738 738

Pole Assessment $159,443 $0 $57,452 $0 Pole Replacement $885,792 $0 $319,180 $0 Other Make Ready $1,993,033 $0 $718,155 $0 Aerial Construction $2,311,208 $0 $931,508 $0 UG Construction $572,054 $7,403,378 $194,333 $2,779,944 Permits $1,800 $36,000 $1,800 $36,000 Drop Construction $797,148 $1,312,013 $315,880 $519,902 Simple PV Pole Rent/Maintenance $885,792 $0 $319,180 $0 **Total $7,606,270 $8,751,392 $2,857,489 $3,335,846**

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.**

DETAIL PROJECT COSTS – AERIAL CONSTRUCTION FOR ENTIRE TOWNSHIP CAPITAL BUDGET ASSUMPTIONS Capital costs to construct the network will be approximately $7,600,000. The timeline anticipated for the build is 13 months based on achievable milestones. The following assumptions were made in the capital projections for the financial model:

• Outside Plant Construction:

o 98.5 miles of distribution plant will be constructed over the course of nine months. Construction

is assumed to begin in Month 4 and to be completed by Month 13. o The cost of aerial construction is estimated at $55,453 per mile. The placeholder for make ready costs are $30,759 per mile. Total aerial labor excluding make ready is $10,972 (plant labor less make ready plus technical labor). Materials cost per mile is $8,334. We have assumed a majority (60%) of fiber will be 96 count fiber. The $55,453 referenced above includes professional services discussed below. o The cost of underground construction is estimated at $116,130 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 $116,130 referenced above includes professional services discussed below.

• Drop Construction:

o 931 homes are expected to sign up for services over the course of two years.

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o The cost of drop construction is $856 per home. Labor is $738 and materials are $80. 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 300 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 1,182 hours over the course of ten months to complete. The design of the outside plant is estimated at 558 hours over the course of ten 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 nine months for a total of 4,140 hours. o Drop surveys to provide the fiber route from the distributed split to the side of the house for contractors is estimated at 419 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 Dexter Township, MI Units Costs**

**NETWORK AND ACCESS EQUIPMENT OUTSIDE PLANT LABOR Pre-Construction** Complete Make Ready Construction 30,758.65 $ 93.6 **2,878,825 $** PM99 (Move Pole Facilities) 72.00 $ 295 **21,259 $** CO12(6M) [Hang stranded fiber] 0.95 $ 49,418 **46,947 $** CO24(6M) [Hang stranded fiber] 0.95 $ 49,418 **46,947 $** CO48(6M) [Hang stranded fiber] 0.95 $ 49,418 **46,947 $** CO96(6M) [Hang stranded fiber] 0.95 $ 296,506 **281,681 $ Aerial** CO144(6M) [Hang stranded fiber] 1.05 $ 49,418 **51,889 $** PM2A [Aerial Bond] 4.50 $ 591 **2,657 $** PF3-3 [Place Screw Anchor] 40.00 $ 281 **11,231 $** PE1-3 [Place down guy] 24.00 $ 281 **6,739 $** PF3-AUX [Install auxiliary eye] 8.00 $ 187 **1,498 $** PM69 [Place fiber storage loop] 50.00 $ 187 **9,359 $** BMUDT [Trench Conduit] 5.50 $ 20,807 **114,441 $** BMUDD [Bore Conduit] 12.00 $ 5,202 **62,422 $** BFO12 [Pull Fiber] 0.90 $ 2,601 **2,341 $** BFO24 [Pull Fiber] 0.90 $ 2,601 **2,341 $** BFO48 [Pull Fiber] 0.90 $ 2,601 **2,341 $** BFO96 [Pull Fiber] 0.90 $ 15,606 **14,045 $ Underground** BFO144 [Pull Fiber] 0.90 $ 2,601 **2,341 $** BM71 [Rock Adder] 10.00 $ 1,300 **13,005 $** BD5 [Pedestals] 60.00 $ 1,306 **78,360 $** BM2-A [Grounding] 40.00 $ 1,306 **52,240 $** BM80 [Risers] 50.00 $ 104 **5,202 $** BM53 [Markers] 20.00 $ 156 **3,121 $** BHF [Handholes] 300.00 $ 52 **15,606 $** SPL [Install Splitter] 50.00 $ 33 **1,663 $** SPL-CBN [Install Splitter Cabinet] 1,000.00 $ 12 **11,609 $** HACO12 [Splice Enclosures for 12 ct] 125.00 $ 104 **13,005 $** HACO24 [Splice Enclosures for 24 ct] 125.00 $ 104 **13,005 $ Technical** HACO48 [Splice Enclosures for 48 ct] 135.00 $ 104 **14,045 $** HACO96 [Splice Enclosures for 96 ct] 150.00 $ 50 **7,500 $** HACO144 [Splice Enclosures for 144 ct] 150.00 $ 104 **15,606 $** TERM 150.00 $ 466 **69,840 $** HO1 [Splicing with bi-directional testing] 25.00 $ 15,191 **379,786 $ Total 4,299,840 $**

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

**NETWORK AND ACCESS EQUIPMENT OUTSIDE PLANT MATERIALS**

12 ct. Loose Tube Fiber 0.30 $ 58,363 **17,509 $** 24 ct. Loose Tube Fiber 0.35 $ 58,363 **20,427 $ Fiber** 48 ct. Loose Tube Fiber 0.45 $ 58,363 **26,263 $** 96 ct. Loose Tube Fiber 0.70 $ 350,179 **245,126 $** 144 ct. Loose Tube Fiber 1.00 $ 58,363 **58,363 $** 1/4" EHS Strand 0.14 $ 501,196 **70,167 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 442 **10,600 $** Weaver(Bonding Clamp) 1.75 $ 871 **1,525 $** #6 Bare Copper Ground Wire 0.34 $ 1,949 **663 $ Aerial** Anchor 8" Helix 26.89 $ 281 **7,550 $** Sno-Shoe (pair) 39.95 $ 187 **7,478 $** Stainless Steel Strap 0.20 $ 6,280 **1,256 $** 1/2" Spacer 0.12 $ 6,280 **754 $** Guy Guards 3.08 $ 281 **865 $** Auxilliary Eye 14.39 $ 187 **2,694 $** #4 Split Bolt 0.81 $ 591 **478 $** Preformed Deadend 1/4" Strand 3.21 $ 1,743 **5,594 $** 12" x 5/8" Machine Bolt w/ Nut 1.07 $ 1,476 **1,580 $** 2"x1/8" Flat Square Washer 0.30 $ 3,514 **1,054 $** 5/8"-11 Square Nut 0.22 $ 2,348 **516 $ Stranded Hardware** 3 Bolt Clamp 4.38 $ 1,772 **7,760 $** 3 Bolt Clamp Curved 5.48 $ 591 **3,236 $** 5/8"Thimble Eye Bolt 3.90 $ 281 **1,095 $** Bug nut(D Lash Clamp) 0.30 $ 6,280 **1,884 $** Guy Hook - Ram's Head 3.01 $ 281 **845 $** Arnco 1.25" HDPE Conduit 0.52 $ 26,009 **13,525 $** Channell 24x36x24 Handhole 193.40 $ 52 **10,060 $** Channell Pedestal 55.00 $ 1,306 **71,830 $** Pedestal Stickers 0.70 $ 1,306 **914 $ Underground** 0.75" Flex Conduit - 20' 9.70 $ 208 **2,018 $** Screw Lags 0.25 $ 2,081 **520 $** 5/8" x 8' Copper Ground Rod 10.31 $ 1,358 **14,001 $** Ground Rod Clamp 0.90 $ 1,358 **1,222 $** Warning Marker 14.60 $ 156 **2,278 $** "A" Splice Enclosure 220.00 $ 208 **45,776 $** "C" Splice Enclosure 250.00 $ 154 **38,509 $** "D" Splice Enclosure 285.00 $ 104 **29,651 $** Splice Trays for A Enclosure 20.00 $ 416 **8,323 $ Technical** Splice Trays for C Enclosure 22.00 $ 512 **11,266 $** Splice Trays for D Enclosure 25.00 $ 624 **15,606 $** Aerial Clamps for FOSC 450 25.82 $ 466 **12,036 $** Splitter Cabinets 5,000.00 $ 12 **58,044 $** Splitters 800.00 $ 33 **26,606 $** AirFOSC 150.00 $ 466 **69,840 $** Splice Protector (sleeves) 0.27 $ 15,191 **4,102 $ Total 931,411 $**

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

**DROP TO THE HOME**

CO2(6M) [Hang stranded fiber] 0.90 $ 167,616 **150,854 $** BMUDT [Trench No Conduit] 2.00 $ 100,570 **201,139 $** BMUDD [Bore Conduit] 12.00 $ 11,174 **134,093 $** BFO2 [Pull Fiber] 1.00 $ 111,744 **111,744 $ Labor** BM83 [Drop Riser Guard] 25.00 $ 372 **9,312 $** BM(0.75) [House Cane] 13.00 $ 372 **4,842 $** PM2A [Aerial Bond] 4.50 $ 559 **2,514 $** BM2-A [Grounding] 40.00 $ 559 **22,349 $** NID [Place NID Housing] 25.00 $ 931 **23,280 $** HO1 [Splicing] 25.00 $ 931 **23,280 $** HO1T [Testing] 4.00 $ 931 **3,725 $** 2 Ct. Loose Tube Fiber 0.20 $ 279,360 **55,872 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 126 **3,017 $** 0.75" Flex Conduit - 20' 9.70 $ 372 **3,613 $** Arnco 0.75" HDPE Conduit 0.30 $ 11,174 **3,352 $** Weaver(Bonding Clamp) 1.84 $ 559 **1,030 $ Materials** #6 Bare Copper Ground Wire 0.38 $ 559 **210 $** #4 Split Bolt 1.33 $ 559 **743 $** 5/8" x 8' Copper Ground Rod 10.31 $ 559 **5,760 $** Ground Rod Clamp 0.90 $ 559 **503 $** Splice Protector (sleeves) 0.27 $ 1,117 **297 $** Calix 700 Series ONT Enclosure - $ 931 **- $**

**Total 761,530 $ PROFESSIONAL SERVICES**

OSP Field Verification/GPS Mapping 86.11 $ 1,182 **101,804 $ Plant Design/Mgmt** OSP Drafting/Design 83.53 $ 558 **46,633 $** OSP Project Management/Inspection 92.37 $ 4,140 **382,400 $** Service Entrance Mapping/Drafting 85.00 $ 419 **35,618 $ Drop Design/Mgmt** Service Entrance Mgmt/Inspection - $ - **- $ - $ Total 566,455 $**

**GRAND TOTAL 6,559,235 $**

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

**Plant Statistics:**

**Construction Statistics:** Homes Passed 2,612

Make Ready Per Aerial Mile $30,759 Small Bus Passed 0

Aerial Production 75 miles per month Large Commercial Total Miles UG % Do you own the poles? Pole Condition Underground Construction Conditions Good Good No

98.5 5.0%

0

UG Avg. Avg. UG Avg. Production Drop Length Length Feet % between of of Drop fiber Drop fiber splices 5 miles per month

along main 100.0 from main to ONT200.0

40.0% 500.0

Number of Substations 0

**Capital Expenditures**

**Summary of Total Capital Required**

**Construction Costs** $6,559,235 **Ongoing Capital Costs at Launch** $1,047,035 **Total Project Capital Costs** $7,606,270

**Construction Costs**

Unit Cost x Quantity = Total Headend/Office Space $239,409 0 $0 Cabinet Equipment $124,409 0 $0 Aerial Construction (A) $55,453 93.6 $5,190,033 Underground Construction (B) $116,130 4.9 $572,054 Drop Construction (C) $856 931 $797,148 **Total Construction $6,559,235**

*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 $74,666 Plant Labor $684 Technical Labor $5,340 Technical Labor $5,340 Tech. Labor $54 Fiber $3,732 Fiber $3,732 Fiber $60 Aerial Materials $1,356 UG Materials $23,758 Materials $20 Technical Mat. $3,246 Technical Mat. $3,246 NID Enclosure $0 Design $1,507 Design $1,507 Design $38 Constr. Mgmt $3,881 Constr. Mgmt $3,881 Constr. Mgmt $0 Total Aerial $55,453 Total UG $116,130 Total Drop $856

**Ongoing Capital Costs at Launch**

Cost x Quantity = Total Pole Assessment $54 2,953 $159,443 Permits $1,200 1.5 $1,800 Simple PV of Pole Rent (20 yrs) $44,290 20 $885,792 Plant Maintenance Materials $0 0 $0 **$1,047,035**

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DETAIL PROJECT COSTS – UNDERGROUND CONSTRUCTION FOR ENTIRE TOWNSHIP CAPITAL BUDGET ASSUMPTIONS Capital costs to construct the network will be approximately $8,800,000. The timeline anticipated for the build is 22 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 98.5 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 22. o The cost of aerial construction is $0. o The cost of underground construction is estimated at $75,161 per mile. Labor is $53,763 per mile including both plant and technical (splicing). Materials are $13,003 per mile which includes fiber, conduit, splitters, splice enclosures and other underground materials. The $75,161 referenced above includes professional services discussed below.

• Drop Construction:

o 931 homes are expected to sign up for services over the course of two years. o The cost of drop construction is $1,409 per home at 100% underground. Labor is $1,292 (all underground) and materials are $79. Drops do not include conduit unless boring (driveways and sidewalks) is required. o Drop length of 300 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 1,182 hours over the course of ten months to complete. The design of the outside plant is estimated at 558 hours over the course of ten 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 19 months for a total of 7,380 hours. o Drop surveys to provide the fiber route from the distributed split to the side of the house for contractors is estimated at 419 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 Dexter Township, MI Units Costs**

**OUTSIDE PLANT LABOR** 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 $ 416,064 **2,288,352 $** BMUDD [Bore Conduit] 12.00 $ 104,016 **1,248,192 $** BFO12 [Pull Fiber] 0.90 $ 52,008 **46,807 $** BFO24 [Pull Fiber] 0.90 $ 52,008 **46,807 $** BFO48 [Pull Fiber] 0.90 $ 52,008 **46,807 $** BFO96 [Pull Fiber] 0.90 $ 312,048 **280,843 $ Underground** BFO144 [Pull Fiber] 0.90 $ 52,008 **46,807 $** BM71 [Rock Adder] 10.00 $ 26,004 **260,040 $** BD5 [Pedestals] 60.00 $ 1,306 **78,360 $** BM2-A [Grounding] 40.00 $ 1,306 **52,240 $** BM80 [Risers] 50.00 $ - **- $** BM53 [Markers] 20.00 $ 3,120 **62,410 $** BHF [Handholes] 300.00 $ 1,040 **312,048 $** SPL [Install Splitter] 50.00 $ 33 **1,663 $** SPL-CBN [Install Splitter Cabinet] 1,000.00 $ 12 **11,609 $** HACO12 [Splice Enclosures for 12 ct] 125.00 $ 104 **13,002 $** HACO24 [Splice Enclosures for 24 ct] 125.00 $ 104 **13,002 $ Technical** HACO48 [Splice Enclosures for 48 ct] 135.00 $ 104 **14,042 $** HACO96 [Splice Enclosures for 96 ct] 150.00 $ 50 **7,500 $** HACO144 [Splice Enclosures for 144 ct] 150.00 $ 104 **15,602 $** TERM 150.00 $ 466 **69,840 $** HO1 [Splicing with bi-directional testing] 25.00 $ 15,189 **379,726 $ Total 5,295,700 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 16

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

**OUTSIDE PLANT MATERIALS**

12 ct. Loose Tube Fiber 0.30 $ 54,608 **16,383 $** 24 ct. Loose Tube Fiber 0.35 $ 54,608 **19,113 $ Fiber** 48 ct. Loose Tube Fiber 0.45 $ 54,608 **24,574 $** 96 ct. Loose Tube Fiber 0.70 $ 327,650 **229,355 $** 144 ct. Loose Tube Fiber 1.00 $ 54,608 **54,608 $** 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 $ 2,346 **798 $ 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 $ 520,080 **270,442 $** Channell 24x36x24 Handhole 193.40 $ 1,040 **201,167 $** Channell Pedestal 55.00 $ 1,306 **71,830 $** Pedestal Stickers 0.70 $ 1,306 **914 $ Underground** 0.75" Flex Conduit - 20' 9.70 $ - **- $** Screw Lags 0.25 $ - **- $** 5/8" x 8' Copper Ground Rod 10.31 $ 2,346 **24,189 $** Ground Rod Clamp 0.90 $ 2,346 **2,112 $** Warning Marker 14.60 $ 3,120 **45,559 $** "A" Splice Enclosure 220.00 $ 208 **45,767 $** "C" Splice Enclosure 250.00 $ 154 **38,504 $** "D" Splice Enclosure 285.00 $ 104 **29,645 $** Splice Trays for A Enclosure 20.00 $ 416 **8,321 $ Technical** Splice Trays for C Enclosure 22.00 $ 512 **11,265 $** Splice Trays for D Enclosure 25.00 $ 624 **15,602 $** Aerial Clamps for FOSC 450 25.82 $ 466 **12,034 $** Splitter Cabinets 5,000.00 $ 12 **58,044 $** Splitters 800.00 $ 33 **26,606 $** AirFOSC 150.00 $ 466 **69,840 $** Splice Protector (sleeves) 0.27 $ 15,189 **4,101 $ Total 1,280,772 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 17

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

**DROP TO THE HOME**

CO2(6M) [Hang stranded fiber] 0.90 $ 0 **0 $** BMUDT [Trench No Conduit] 2.00 $ 251,424 **502,847 $** BMUDD [Bore Conduit] 12.00 $ 27,936 **335,232 $** BFO2 [Pull Fiber] 1.00 $ 279,360 **279,360 $ Labor** BM83 [Drop Riser Guard] 25.00 $ 931 **23,280 $** BM(0.75) [House Cane] 13.00 $ 931 **12,106 $** PM2A [Aerial Bond] 4.50 $ 0 **0 $** BM2-A [Grounding] 40.00 $ 0 **0 $** NID [Place NID Housing] 25.00 $ 931 **23,280 $** HO1 [Splicing] 25.00 $ 931 **23,280 $** HO1T [Testing] 4.00 $ 931 **3,725 $** 2 Ct. Loose Tube Fiber 0.20 $ 279,360 **55,872 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 0 **0 $** 0.75" Flex Conduit - 20' 9.70 $ 931 **9,033 $** Arnco 0.75" HDPE Conduit 0.30 $ 27,936 **8,381 $** 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 - $ 931 **- $**

**Total 1,276,395 $ PROFESSIONAL SERVICES**

OSP Field Verification/GPS Mapping 86.11 $ 1,182 **101,783 $ Plant Design/Mgmt** OSP Drafting/Design 83.53 $ 558 **46,623 $** OSP Project Management/Inspection 91.94 $ 7,380 **678,500 $** Service Entrance Mapping/Drafting 85.00 $ 419 **35,618 $ Drop Design/Mgmt** Service Entrance Mgmt/Inspection - $ - **- $ - $ Total 862,525 $**

**GRAND TOTAL 8,715,392 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 18

MODEL ASSUMPTIONS AND OUTPUT **Plant Statistics:** Homes Passed 2,612 Small Bus Passed 0 Large Commercial 0 Total Miles 98.5 UG % 100.0%

The below inputs drive the 20-year Pulse financial model created for Dexter Township.

**Construction Statistics:** Make Ready Per Aerial Mile $0 Aerial Production 75 miles per month UG Production 5 miles per month Avg. Length of Drop fiber along main 100.0

Do you own the poles? No

Avg. Length of Drop fiber from main to ONT200.0 Pole Condition Good

UG Drop % 100.0% Underground Construction Conditions Good

Avg. Feet between splices 500.0 Number of Substations 0

**Capital Expenditures**

**Summary of Total Capital Required**

**Construction Costs** $8,715,392 **Ongoing Capital Costs at Launch** $36,000 **Total Project Capital Costs** $8,751,392

**Construction Costs**

Unit Cost x Quantity = Total Headend/Office Space $239,409 0 $0 Cabinet Equipment $124,409 0 $0 Aerial Construction (A) $27,462 0.0 $0 Underground Construction (B) $75,161 98.5 $7,403,378 Drop Construction (C) $1,409 931 $1,312,013 **Total Construction $8,715,392**

*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 $48,423 Plant Labor $1,238 Technical Labor $5,340 Technical Labor $5,340 Tech. Labor $54 Fiber $3,493 Fiber $3,493 Fiber $60 Aerial Materials $1,356 UG Materials $6,264 Materials $19 Technical Mat. $3,246 Technical Mat. $3,246 NID Enclosure $0 Design $1,507 Design $1,507 Design $38 Constr. Mgmt $6,888 Constr. Mgmt $6,888 Constr. Mgmt $0 Total Aerial $27,462 Total UG $75,161 Total Drop $1,409

**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 DEXSTER TOWNSHIP 19

DETAIL PROJECT COSTS – AERIAL CONSTRUCTION FOR AREAS NOT SERVED BY CHARTER/COMCAST CAPITAL BUDGET ASSUMPTIONS Capital costs to construct the network will be approximately $2,860,000. The timeline anticipated for the build is seven months based on achievable milestones. The following assumptions were made in the capital projections for the financial model:

• Outside Plant Construction:

o 35.5 miles of distribution plant will be constructed over the course of four months. Construction

is assumed to begin in Month 4 and to be completed by Month 7. o The cost of aerial construction is estimated at $58,379 per mile. The placeholder for make ready costs are $30,759 per mile. Total aerial labor excluding make ready is $12,258 (plant labor less make ready plus technical labor). Materials cost per mile is $8,644. We have assumed a majority (60%) of fiber will be 96 count fiber. The $58,379 referenced above includes professional services discussed below. o The cost of underground construction is estimated at $109,843 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 $109,843 referenced above includes professional services discussed below.

• Drop Construction:

o 369 homes are expected to sign up for services over the course of two years. o The cost of drop construction is $856 per home. Labor is $738 and materials are $80. 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 300 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 426 hours over the course of four months to complete. The design of the outside plant is estimated at 201 hours over the course of four 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 four months for a total of 1,980 hours. o Drop surveys to provide the fiber route from the distributed split to the side of the house for contractors is estimated at 166 hours to map and draft. These will be completed over the course of six months.

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 20

CAPITAL BUDGET

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

**NETWORK AND ACCESS EQUIPMENT OUTSIDE PLANT LABOR Pre-Construction** Complete Make Ready Construction 30,758.65 $ 33.7 **1,037,336 $** PM99 (Move Pole Facilities) 72.00 $ 106 **7,660 $** CO12(6M) [Hang stranded fiber] 0.95 $ 17,807 **16,916 $** CO24(6M) [Hang stranded fiber] 0.95 $ 17,807 **16,916 $** CO48(6M) [Hang stranded fiber] 0.95 $ 17,807 **16,916 $** CO96(6M) [Hang stranded fiber] 0.95 $ 106,841 **101,499 $ Aerial** CO144(6M) [Hang stranded fiber] 1.05 $ 17,807 **18,697 $** PM2A [Aerial Bond] 4.50 $ 213 **958 $** PF3-3 [Place Screw Anchor] 40.00 $ 101 **4,047 $** PE1-3 [Place down guy] 24.00 $ 101 **2,428 $** PF3-AUX [Install auxiliary eye] 8.00 $ 67 **540 $** PM69 [Place fiber storage loop] 50.00 $ 67 **3,373 $** BMUDT [Trench Conduit] 5.50 $ 7,498 **41,237 $** BMUDD [Bore Conduit] 12.00 $ 1,874 **22,493 $** BFO12 [Pull Fiber] 0.90 $ 937 **843 $** BFO24 [Pull Fiber] 0.90 $ 937 **843 $** BFO48 [Pull Fiber] 0.90 $ 937 **843 $** BFO96 [Pull Fiber] 0.90 $ 5,623 **5,061 $ Underground** BFO144 [Pull Fiber] 0.90 $ 937 **843 $** BM71 [Rock Adder] 10.00 $ 469 **4,686 $** BD5 [Pedestals] 60.00 $ 369 **22,140 $** BM2-A [Grounding] 40.00 $ 369 **14,760 $** BM80 [Risers] 50.00 $ 37 **1,874 $** BM53 [Markers] 20.00 $ 56 **1,125 $** BHF [Handholes] 300.00 $ 19 **5,623 $** SPL [Install Splitter] 50.00 $ 13 **659 $** SPL-CBN [Install Splitter Cabinet] 1,000.00 $ 3 **3,280 $** HACO12 [Splice Enclosures for 12 ct] 125.00 $ 37 **4,686 $** HACO24 [Splice Enclosures for 24 ct] 125.00 $ 37 **4,686 $ Technical** HACO48 [Splice Enclosures for 48 ct] 135.00 $ 37 **5,061 $** HACO96 [Splice Enclosures for 96 ct] 150.00 $ 50 **7,500 $** HACO144 [Splice Enclosures for 144 ct] 150.00 $ 37 **5,623 $** TERM 150.00 $ 185 **27,675 $** HO1 [Splicing with bi-directional testing] 25.00 $ 7,043 **176,066 $ Total 1,584,894 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 21

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

**OUTSIDE PLANT MATERIALS**

12 ct. Loose Tube Fiber 0.30 $ 21,030 **6,309 $** 24 ct. Loose Tube Fiber 0.35 $ 21,030 **7,361 $ Fiber** 48 ct. Loose Tube Fiber 0.45 $ 21,030 **9,464 $** 96 ct. Loose Tube Fiber 0.70 $ 126,181 **88,327 $** 144 ct. Loose Tube Fiber 1.00 $ 21,030 **21,030 $** 1/4" EHS Strand 0.14 $ 180,597 **25,284 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 159 **3,820 $** Weaver(Bonding Clamp) 1.75 $ 314 **549 $** #6 Bare Copper Ground Wire 0.34 $ 601 **204 $ Aerial** Anchor 8" Helix 26.89 $ 101 **2,721 $** Sno-Shoe (pair) 39.95 $ 67 **2,695 $** Stainless Steel Strap 0.20 $ 2,263 **453 $** 1/2" Spacer 0.12 $ 2,263 **272 $** Guy Guards 3.08 $ 101 **312 $** Auxilliary Eye 14.39 $ 67 **971 $** #4 Split Bolt 0.81 $ 213 **172 $** Preformed Deadend 1/4" Strand 3.21 $ 628 **2,016 $** 12" x 5/8" Machine Bolt w/ Nut 1.07 $ 532 **569 $** 2"x1/8" Flat Square Washer 0.30 $ 1,266 **380 $** 5/8"-11 Square Nut 0.22 $ 846 **186 $ Stranded Hardware** 3 Bolt Clamp 4.38 $ 638 **2,796 $** 3 Bolt Clamp Curved 5.48 $ 213 **1,166 $** 5/8"Thimble Eye Bolt 3.90 $ 101 **395 $** Bug nut(D Lash Clamp) 0.30 $ 2,263 **679 $** Guy Hook - Ram's Head 3.01 $ 101 **305 $** Arnco 1.25" HDPE Conduit 0.52 $ 9,372 **4,873 $** Channell 24x36x24 Handhole 193.40 $ 19 **3,625 $** Channell Pedestal 55.00 $ 369 **20,295 $** Pedestal Stickers 0.70 $ 369 **258 $ Underground** 0.75" Flex Conduit - 20' 9.70 $ 75 **727 $** Screw Lags 0.25 $ 750 **187 $** 5/8" x 8' Copper Ground Rod 10.31 $ 388 **3,998 $** Ground Rod Clamp 0.90 $ 388 **349 $** Warning Marker 14.60 $ 56 **821 $** "A" Splice Enclosure 220.00 $ 75 **16,495 $** "C" Splice Enclosure 250.00 $ 87 **21,872 $** "D" Splice Enclosure 285.00 $ 37 **10,684 $** Splice Trays for A Enclosure 20.00 $ 150 **2,999 $ Technical** Splice Trays for C Enclosure 22.00 $ 312 **6,874 $** Splice Trays for D Enclosure 25.00 $ 225 **5,623 $** Aerial Clamps for FOSC 450 25.82 $ 200 **5,163 $** Splitter Cabinets 5,000.00 $ 3 **16,400 $** Splitters 800.00 $ 13 **10,543 $** AirFOSC 150.00 $ 185 **27,675 $** Splice Protector (sleeves) 0.27 $ 7,043 **1,902 $ Total 339,795 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 22

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

**DROP TO THE HOME**

CO2(6M) [Hang stranded fiber] 0.90 $ 66,420 **59,778 $** BMUDT [Trench No Conduit] 2.00 $ 39,852 **79,704 $** BMUDD [Bore Conduit] 12.00 $ 4,428 **53,136 $** BFO2 [Pull Fiber] 1.00 $ 44,280 **44,280 $ Labor** BM83 [Drop Riser Guard] 25.00 $ 148 **3,690 $** BM(0.75) [House Cane] 13.00 $ 148 **1,919 $** PM2A [Aerial Bond] 4.50 $ 221 **996 $** BM2-A [Grounding] 40.00 $ 221 **8,856 $** NID [Place NID Housing] 25.00 $ 369 **9,225 $** HO1 [Splicing] 25.00 $ 369 **9,225 $** HO1T [Testing] 4.00 $ 369 **1,476 $** 2 Ct. Loose Tube Fiber 0.20 $ 110,700 **22,140 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 50 **1,196 $** 0.75" Flex Conduit - 20' 9.70 $ 148 **1,432 $** Arnco 0.75" HDPE Conduit 0.30 $ 4,428 **1,328 $** Weaver(Bonding Clamp) 1.84 $ 221 **408 $ Materials** #6 Bare Copper Ground Wire 0.38 $ 221 **83 $** #4 Split Bolt 1.33 $ 221 **294 $** 5/8" x 8' Copper Ground Rod 10.31 $ 221 **2,283 $** Ground Rod Clamp 0.90 $ 221 **199 $** Splice Protector (sleeves) 0.27 $ 443 **118 $** Calix 700 Series ONT Enclosure - $ 369 **- $**

**Total 301,766 $ PROFESSIONAL SERVICES**

OSP Field Verification/GPS Mapping 86.11 $ 426 **36,683 $ Plant Design/Mgmt** OSP Drafting/Design 83.53 $ 201 **16,803 $** OSP Project Management/Inspection 93.43 $ 1,980 **185,000 $** Service Entrance Mapping/Drafting 85.00 $ 166 **14,114 $ Drop Design/Mgmt** Service Entrance Mgmt/Inspection - $ - **- $ - $ Total 252,601 $**

**GRAND TOTAL 2,479,057 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 23

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

**Plant Statistics:**

**Construction Statistics:** Homes Passed 738

Make Ready Per Aerial Mile $30,759 Small Bus Passed 0

Aerial Production 75 miles per month Large Commercial 0

UG Production 5 miles per month Total Miles 35.5

Avg. Length of Drop fiber along main 100.0 UG % 5.0%

Avg. Length of Drop fiber from main to ONT200.0 Do you own the poles? No

UG Drop % 40.0% 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** $2,479,057 **Ongoing Capital Costs at Launch** $378,433 **Total Project Capital Costs** $2,857,489

**Construction Costs**

Unit Cost x Quantity = Total Headend/Office Space $185,925 0 $0 Cabinet Equipment $70,925 0 $0 Aerial Construction (A) $58,379 33.7 $1,968,843 Underground Construction (B) $109,483 1.8 $194,333 Drop Construction (C) $856 369 $315,880 **Total Construction $2,479,057**

*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 $68,942 Plant Labor $684 Technical Labor $6,626 Technical Labor $6,626 Tech. Labor $54 Fiber $3,732 Fiber $3,732 Fiber $60 Aerial Materials $1,356 UG Materials $19,909 Materials $20 Technical Mat. $3,556 Technical Mat. $3,556 NID Enclosure $0 Design $1,507 Design $1,507 Design $38 Constr. Mgmt $5,211 Constr. Mgmt $5,211 Constr. Mgmt $0 Total Aerial $58,379 Total UG $109,483 Total Drop $856

**Ongoing Capital Costs at Launch**

Cost x Quantity = Total Pole Assessment $54 1,064 $57,452 Permits $1,200 1.5 $1,800 Simple PV of Pole Rent (20 yrs) $15,959 20 $319,180 Plant Maintenance Materials $0 0 $0 **$378,433**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 24

DETAIL PROJECT COSTS – UNDERGROUND CONSTRUCTION FOR AREAS NOT SERVED BY CHARTER/COMCAST CAPITAL BUDGET ASSUMPTIONS Capital costs to construct the network will be approximately $3,350,000. The timeline anticipated for the build is 11 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 35.5 miles of distribution plant will be constructed over the course of eight months. Construction

is assumed to begin in Month 4 and to be completed by Month 11. o The cost of aerial construction is $0. o The cost of underground construction is estimated at $78,308 per mile. Labor is $54,763 per mile including both plant and technical (splicing). Materials are $13,120 per mile which includes fiber, conduit, splitters, splice enclosures and other underground materials. The $78,308 referenced above includes professional services discussed below.

• Drop Construction:

o 369 homes are expected to sign up for services over the course of two years. o The cost of drop construction is $1,409 per home at 100% underground. Labor is $1,292 (all underground) and materials are $79. Drops do not include conduit unless boring (driveways and sidewalks) is required. o Drop length of 300 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 426 hours over the course of four months to complete. The design of the outside plant is estimated at 201 hours over the course of four 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 eight months for a total of 3,420 hours. o Drop surveys to provide the fiber route from the distributed split to the side of the house for contractors is estimated at 166 hours to map and draft. These will be completed over the course of six months.

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 25

CAPITAL BUDGET

**Township PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Dexter 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 $ 149,952 **824,736 $** BMUDD [Bore Conduit] 12.00 $ 37,488 **449,856 $** BFO12 [Pull Fiber] 0.90 $ 18,744 **16,870 $** BFO24 [Pull Fiber] 0.90 $ 18,744 **16,870 $** BFO48 [Pull Fiber] 0.90 $ 18,744 **16,870 $** BFO96 [Pull Fiber] 0.90 $ 112,464 **101,218 $ Underground** BFO144 [Pull Fiber] 0.90 $ 18,744 **16,870 $** BM71 [Rock Adder] 10.00 $ 9,372 **93,720 $** BD5 [Pedestals] 60.00 $ 369 **22,140 $** BM2-A [Grounding] 40.00 $ 369 **14,760 $** BM80 [Risers] 50.00 $ - **- $** BM53 [Markers] 20.00 $ 1,125 **22,493 $** BHF [Handholes] 300.00 $ 375 **112,464 $** SPL [Install Splitter] 50.00 $ 13 **659 $** SPL-CBN [Install Splitter Cabinet] 1,000.00 $ 3 **3,280 $** HACO12 [Splice Enclosures for 12 ct] 125.00 $ 37 **4,686 $** HACO24 [Splice Enclosures for 24 ct] 125.00 $ 37 **4,686 $ Technical** HACO48 [Splice Enclosures for 48 ct] 135.00 $ 37 **5,061 $** HACO96 [Splice Enclosures for 96 ct] 150.00 $ 50 **7,500 $** HACO144 [Splice Enclosures for 144 ct] 150.00 $ 37 **5,623 $** TERM 150.00 $ 185 **27,675 $** HO1 [Splicing with bi-directional testing] 25.00 $ 7,043 **176,066 $ Total 1,944,101 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 26

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

**OUTSIDE PLANT MATERIALS**

12 ct. Loose Tube Fiber 0.30 $ 19,681 **5,904 $** 24 ct. Loose Tube Fiber 0.35 $ 19,681 **6,888 $ Fiber** 48 ct. Loose Tube Fiber 0.45 $ 19,681 **8,857 $** 96 ct. Loose Tube Fiber 0.70 $ 118,087 **82,661 $** 144 ct. Loose Tube Fiber 1.00 $ 19,681 **19,681 $** 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 $ 744 **253 $ 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 $ 187,440 **97,469 $** Channell 24x36x24 Handhole 193.40 $ 375 **72,502 $** Channell Pedestal 55.00 $ 369 **20,295 $** Pedestal Stickers 0.70 $ 369 **258 $ Underground** 0.75" Flex Conduit - 20' 9.70 $ - **- $** Screw Lags 0.25 $ - **- $** 5/8" x 8' Copper Ground Rod 10.31 $ 744 **7,669 $** Ground Rod Clamp 0.90 $ 744 **669 $** Warning Marker 14.60 $ 1,125 **16,420 $** "A" Splice Enclosure 220.00 $ 75 **16,495 $** "C" Splice Enclosure 250.00 $ 87 **21,872 $** "D" Splice Enclosure 285.00 $ 37 **10,684 $** Splice Trays for A Enclosure 20.00 $ 150 **2,999 $ Technical** Splice Trays for C Enclosure 22.00 $ 312 **6,874 $** Splice Trays for D Enclosure 25.00 $ 225 **5,623 $** Aerial Clamps for FOSC 450 25.82 $ 200 **5,163 $** Splitter Cabinets 5,000.00 $ 3 **16,400 $** Splitters 800.00 $ 13 **10,543 $** AirFOSC 150.00 $ 185 **27,675 $** Splice Protector (sleeves) 0.27 $ 7,043 **1,902 $ Total 465,756 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 27

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

**DROP TO THE HOME**

CO2(6M) [Hang stranded fiber] 0.90 $ 0 **0 $** BMUDT [Trench No Conduit] 2.00 $ 99,630 **199,260 $** BMUDD [Bore Conduit] 12.00 $ 11,070 **132,840 $** BFO2 [Pull Fiber] 1.00 $ 110,700 **110,700 $ Labor** BM83 [Drop Riser Guard] 25.00 $ 369 **9,225 $** BM(0.75) [House Cane] 13.00 $ 369 **4,797 $** PM2A [Aerial Bond] 4.50 $ 0 **0 $** BM2-A [Grounding] 40.00 $ 0 **0 $** NID [Place NID Housing] 25.00 $ 369 **9,225 $** HO1 [Splicing] 25.00 $ 369 **9,225 $** HO1T [Testing] 4.00 $ 369 **1,476 $** 2 Ct. Loose Tube Fiber 0.20 $ 110,700 **22,140 $** Lashing wire 0.038" Type 302 1,600' Roll 24.00 $ 0 **0 $** 0.75" Flex Conduit - 20' 9.70 $ 369 **3,579 $** Arnco 0.75" HDPE Conduit 0.30 $ 11,070 **3,321 $** 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 - $ 369 **- $** Contracted Installation Labor 125.00 $ - **- $ Installation** Calix 700 Series ONT Electronics 275.00 $ 369 **101,475 $** Miscellaneous Materials 15.00 $ 369 **5,535 $**

**- $ Total 505,788 $ PROFESSIONAL SERVICES**

OSP Field Verification/GPS Mapping 86.11 $ 426 **36,683 $ Plant Design/Mgmt** OSP Drafting/Design 83.53 $ 201 **16,803 $** OSP Project Management/Inspection 92.57 $ 3,420 **316,600 $** Service Entrance Mapping/Drafting 85.00 $ 166 **14,114 $ Drop Design/Mgmt** Service Entrance Mgmt/Inspection - $ - **- $ - $ Total 384,201 $**

**GRAND TOTAL 3,299,846 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 28

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

**Plant Statistics:** Homes Passed Small Bus Passed Large Commercial Total Miles UG % Do you own the poles? 738 0 0 35.5 100.0% No

**Construction Statistics:** Make Ready Per Aerial Mile $0 Aerial Production 75 UG Production 5 Avg. Length of Drop fiber along main 100.0 Avg. Length of Drop fiber from main to ONT200.0

miles miles per per month month

Pole Condition Good

UG Drop % 100.0% Underground Construction Conditions Good

Avg. Feet between splices 500.0 Number of Substations 0

**Capital Expenditures**

**Summary of Total Capital Required**

**Construction Costs** $3,299,846 **Ongoing Capital Costs at Launch** $36,000 **Total Project Capital Costs** $3,335,846

**Construction Costs**

Unit Cost x Quantity = Total Headend/Office Space $185,925 0 $0 Cabinet Equipment $70,925 0 $0 Aerial Construction (A) $31,088 0.0 $0 Underground Construction (B) $78,308 35.5 $2,779,944 Drop Construction (C) $1,409 369 $519,902 **Total Construction $3,299,846**

*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 $48,137 Plant Labor $1,238 Technical Labor $6,626 Technical Labor $6,626 Tech. Labor $54 Fiber $3,493 Fiber $3,493 Fiber $60 Aerial Materials $1,356 UG Materials $6,071 Materials $19 Technical Mat. $3,556 Technical Mat. $3,556 NID Enclosure $0 Design $1,507 Design $1,507 Design $38 Constr. Mgmt $8,918 Constr. Mgmt $8,918 Constr. Mgmt $0 Total Aerial $31,088 Total UG $78,308 Total Drop $1,409

**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 DEXSTER TOWNSHIP 29

DETAIL PROJECT COSTS – ISP IF DEXTER BUILDS ENTIRE TOWNSHIP CAPITAL BUDGET ASSUMPTIONS Capital costs to operate the network will be approximately $660,000. 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 $229,409. 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 DEXSTER TOWNSHIP 30

CAPITAL BUDGET

**ISP PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Dexter 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 $ 33 **39,909 $** 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 239,409 $ DROP TO THE HOME**

Contracted Installation Labor 125.00 $ 552 **69,011 $ Installation** Calix 700 Series ONT Electronics 275.00 $ 931 **256,080 $** Calix 700 Series ONT Enclosure 30.00 $ 931 **27,936 $** Miscellaneous Materials $15 931 **13,968 $ Total 366,995 $ 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 660,904 $**

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 31

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

**Plant Statistics:** Homes Passed 2,612 Small Bus Passed 0 Large Commercial 0 Total Miles 98.5

**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 36% 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 DEXSTER TOWNSHIP 32

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

• $827,000 loan assumed for first year which includes $166,000 operating runway

• Positive monthly cash flow after debt service

• Simple payback period for the project of 3.8 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 2,612 2,612 2,612 2,612 2,612 Take Rate 35.7% 35.7% 35.7% 35.7% 35.7% Residential Customers 931 931 931 931 931

Network Equipment ($ 000's) $239 $0 $0 $0 $0 $239 $92 $257 In-Home Capital Expenditures ($ 000's) $421 $0 $0 $0 $0 $421 $161 $453 Op. Exp. and Cash Cushion ($000's) $166 $67 $0 $0 $0 $233 $89 $250 Total Capital Expenditures ($ 000's) $827 $67 $0 $0 $0 $894 $342 $960

Grants Received ($ 000's) $0 $0 $0 $0 $0 $0 $0 $0 Debt Incurred ($ 000's) $827 $67 $0 $0 $0 $894 $342 $960

**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 $20.26 $20.43 $20.84 $21.24 $21.65 Customer Margin $33.86 $33.80 $33.67 $33.53 $33.40 Operating Costs $11.21 $15.13 $15.39 $15.66 $15.93 Total EBITDA $22.65 $18.68 $18.28 $17.88 $17.47

Debt Service $10.33 $11.16 $11.16 $11.16 $11.16

Monthly Cash Flow $12.32 $7.51 $7.11 $6.71 $6.30

**Key Project Viability Indicators**

Year 1 Year 2 Year 3 Year 4 Year 5 EBITDA per Customer $22.65 $18.68 $18.28 $17.88 $17.47 Equity to Assets % -9.7% 4.7% 17.8% 30.9% 44.2% TIER 6.30 4.90 5.50 6.36 7.73

Simple Payback 3.8 years Project IRR 17.5% Loan Term 8.4 years Loan Interest Rate 3.8%

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 33

**Dexter 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 2,612 2,612 2,612 2,612 2,612 2,612 2,612 2,638 2,665 2,692 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 35.7% 35.7% 35.7% 35.7% 35.7% 40.2% 40.2% 40.2% 40.2% 40.2% 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 931 931 931 931 931 1,051 1,051 1,061 1,072 1,083 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 931 0 0 0 0 120 0 11 11 11

***Projected Income Statement:***

Revenue:

Data only $88,246 $332,220 $333,638 $335,299 $336,959 $367,322 $383,994 $387,966 $393,766 $399,644 Double Play - Data/VoIP $72,476 $272,853 $274,018 $275,382 $276,745 $301,683 $315,375 $318,637 $323,401 $328,228 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 $160,722 $605,074 $607,656 $610,680 $613,704 $669,005 $699,370 $706,603 $717,167 $727,872**

Bandwidth costs $19,791 $26,443 $26,894 $27,422 $27,949 $28,477 $29,005 $29,533 $30,060 $30,588 Telephone costs $11,582 $43,671 $44,415 $45,287 $46,159 $51,024 $54,056 $55,339 $56,894 $58,474 Customer care and billing $29,697 $111,977 $113,886 $116,121 $118,356 $130,831 $138,604 $141,895 $145,882 $149,934 Network management $11,879 $44,791 $45,554 $46,448 $47,342 $52,332 $55,442 $56,758 $58,353 $59,974 Pulse Integration consulting $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 **Total direct variable costs $72,949 $226,881 $230,749 $235,277 $239,806 $262,664 $277,107 $283,525 $291,189 $298,971**

**Total direct margin $87,773 $378,192 $376,907 $375,403 $373,898 $406,341 $422,263 $423,078 $425,978 $428,901 *Direct margin per customer*** *$7.85 $33.84 $33.73 $33.59 $33.46 $32.22 $33.49 $33.22 $33.11 $33.01*

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 34

**Dexter 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 $1,103 $6,050 $6,074 $6,104 $6,135 $6,621 $6,991 $7,057 $7,163 $7,270 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 ($30,088) $0 $0 $0 $0 ($10,277) $0 ($944) ($972) ($1,001) Payroll taxes and benefits $7,456 $45,000 $45,900 $46,818 $47,754 $43,571 $49,684 $50,206 $51,205 $52,224 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 $2,394 $2,394 $2,394 $2,394 $2,394 $2,394 $2,394 $2,993 $4,788 Pole rental $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Marketing sales $46,560 $0 $0 $0 $0 $5,981 $0 $528 $533 $538 Other operating expense $3,214 $12,101 $12,153 $12,214 $12,274 $13,380 $13,987 $14,132 $14,343 $14,557 **Total operating expenses $82,845 $169,009 $171,932 $174,927 $177,979 $173,159 $186,652 $189,118 $193,202 $198,550**

**EBITDA $4,928 $209,183 $204,975 $200,476 $195,919 $233,182 $235,612 $233,960 $232,776 $230,351 *EBITDA Margin*** *3.1% 34.6% 33.7% 32.8% 31.9% 34.9% 33.7% 33.1% 32.5% 31.6%*

Interest Expense $29,556 $28,666 $25,000 $21,195 $17,244 $13,142 $8,884 $15,681 $19,158 $16,156 Depreciation $43,258 $76,265 $76,265 $76,265 $76,265 $79,542 $81,234 $81,471 $81,912 $82,357

**Net income ($67,886) $104,251 $103,709 $103,016 $102,410 $140,498 $145,493 $136,808 $131,706 $131,838**

***Average Customer Statistics:*** Revenue Per Customer $34.52 $54.15 $54.38 $54.65 $54.92 $53.05 $55.46 $55.48 $55.75 $56.02 Direct Variable Cost $15.67 $20.30 $20.65 $21.06 $21.46 $20.83 $21.98 $22.26 $22.63 $23.01 Direct Margin Per Customer $18.85 $33.84 $33.73 $33.59 $33.46 $32.22 $33.49 $33.22 $33.11 $33.01 Indirect Operating Cost $17.79 $15.12 $15.39 $15.65 $15.93 $13.73 $14.80 $14.85 $15.02 $15.28 Total Margin per Customer $1.06 $18.72 $18.34 $17.94 $17.53 $18.49 $18.68 $18.37 $18.09 $17.73

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 35

**Dexter 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 ($67,886) $104,251 $103,709 $103,016 $102,410 $140,498 $145,493 $136,808 $131,706 $131,838 Add: depreciation $43,258 $76,265 $76,265 $76,265 $76,265 $79,542 $81,234 $81,471 $81,912 $82,357 Change in receivables ($50,397) ($105) ($252) ($252) ($252) ($6,869) ($284) ($874) ($886) ($897) Change in payables $29,309 $3,802 $622 $627 $632 $3,166 $686 $847 $1,133 $949 **Cash flow to/from operations ($45,716) $184,214 $180,345 $179,656 $179,055 $216,336 $227,129 $218,252 $213,865 $214,247**

Capital expenditures ($660,904) $0 $0 $0 $0 ($38,281) $0 ($313,958) ($242,821) ($3,446) **Cash flows to investing ($660,904) $0 $0 $0 $0 ($38,281) $0 ($313,958) ($242,821) ($3,446)**

Proceeds from senior debt financing $827,257 $66,793 $0 $0 $0 $0 $0 $313,958 $242,821 $0 Principal payments on senior debt ($85,876) ($96,086) ($99,752) ($103,558) ($107,509) ($111,610) ($115,868) ($152,881) ($115,950) ($65,418) 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 $741,380 ($29,294) ($99,752) ($103,558) ($107,509) ($111,610) ($115,868) $161,078 $126,871 ($65,418)**

**Ending cash balance $34,760 $189,680 $270,273 $346,371 $417,917 $484,361 $595,621 $660,992 $758,908 $904,290**

***Projected Balance Sheet:***

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Cash $34,760 $189,680 $270,273 $346,371 $417,917 $484,361 $595,621 $660,992 $758,908 $904,290 Receivables $50,397 $50,502 $50,754 $51,006 $51,257 $58,127 $58,411 $59,285 $60,171 $61,068 Total current assets $85,156 $240,182 $321,026 $397,376 $469,175 $542,488 $654,032 $720,277 $819,078 $965,358

Property $660,904 $660,904 $660,904 $660,904 $660,904 $699,186 $699,186 $1,013,144 $1,255,965 $1,259,411 Depreciation ($43,258) ($119,523) ($195,788) ($272,053) ($348,319) ($427,860) ($509,095) ($590,566) ($672,478) ($754,835)

**Total assets** $702,803 $781,563 $786,142 $786,227 $781,760 $813,813 $844,123 $1,142,855 $1,402,565 $1,469,934

Payables and deferred revenue $29,309 $33,111 $33,733 $34,360 $34,992 $38,158 $38,843 $39,690 $40,823 $41,772 Bank debt $741,380 $712,087 $612,334 $508,777 $401,268 $289,657 $173,789 $334,866 $461,738 $396,319 Total liabilities $770,689 $745,198 $646,068 $543,137 $436,260 $327,815 $212,632 $374,556 $502,561 $438,091

Contributed equity $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Accumulated income/loss ($67,886) $36,365 $140,075 $243,091 $345,500 $485,998 $631,491 $768,299 $900,005 $1,031,842 Total Equity ($67,886) $36,365 $140,075 $243,091 $345,500 $485,998 $631,491 $768,299 $900,005 $1,031,842

**Total Liabilities and Equity** $702,803 $781,563 $786,142 $786,227 $781,760 $813,813 $844,123 $1,142,855 $1,402,565 $1,469,934

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 36

DETAIL PROJECT COSTS – ISP IF DEXTER BUILDS ONLY THE AREA NOT SERVED BY COMCAST/CHARTER CAPITAL BUDGET ASSUMPTIONS Capital costs to operate the network will be approximately $372,000. 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 $185,925. 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 DEXSTER TOWNSHIP 37

CAPITAL BUDGET

**ISP PROJECT: SERVICE AREA: Unit Cost No. of Total FTTH Network Dexter 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 $ 13 **15,814 $** 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 $ 2 **19,593 $ Total 185,925 $ DROP TO THE HOME**

Contracted Installation Labor 125.00 $ 110 **13,722 $ Installation** Calix 700 Series ONT Electronics 275.00 $ 369 **101,475 $** Calix 700 Series ONT Enclosure 30.00 $ 369 **11,070 $** Miscellaneous Materials $15 369 **5,535 $ Total 131,802 $ 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 372,227 $**

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

**Plant Statistics:** Homes Passed 738 Small Bus Passed 0 Large Commercial 0 Total Miles 35.5

**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 8.4 years Interest Rate 3.8% Plant Depreciable Life 8.4 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 Dexter Township to share with interested parties. A few very important notes to show financial feasibility of the project include:

• $506,000 loan assumed for first year which includes $134,000 operating runway

• Negative monthly cash flow after debt service

• Requires higher pricing to turn positive cash flow

**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 738 738 738 738 738 Take Rate 50.0% 50.0% 50.0% 50.0% 50.0% Residential Customers 369 369 369 369 369

Network Equipment ($ 000's) $186 $0 $0 $0 $0 $186 $252 $504 In-Home Capital Expenditures ($ 000's) $186 $0 $0 $0 $0 $186 $252 $505 Op. Exp. and Cash Cushion ($000's) $134 $45 $0 $0 $0 $178 $242 $484 Total Capital Expenditures ($ 000's) $506 $45 $0 $0 $0 $551 $746 $1,492

Grants Received ($ 000's) $0 $0 $0 $0 $0 $0 $0 $0 Debt Incurred ($ 000's) $506 $45 $0 $0 $0 $551 $746 $1,492

**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 $23.86 $24.06 $24.54 $25.01 $25.49 Customer Margin $42.26 $42.20 $42.05 $41.91 $41.76 Operating Costs $25.49 $35.94 $36.59 $37.25 $37.93 Total EBITDA $16.77 $6.26 $5.46 $4.65 $3.83

Debt Service $15.94 $17.35 $17.35 $17.35 $17.35

Monthly Cash Flow $0.83 ($11.09) ($11.89) ($12.70) ($13.53)

**Key Project Viability Indicators**

Year 1 Year 2 Year 3 Year 4 Year 5 EBITDA per Customer $16.77 $6.26 $5.46 $4.65 $3.83 Equity to Assets % -20.0% -32.6% -59.4% -123.5% -481.2% TIER 1.71 (1.03) (1.44) (2.03) (2.94)

Simple Payback 20.0 years Project IRR #NUM! Loan Term 8.4 years Loan Interest Rate 3.8%

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**Dexter 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 738 738 738 738 738 738 738 745 753 760 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 369 369 369 369 369 403 403 407 411 415 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 369 0 0 0 0 34 0 4 4 4

***Projected Income Statement:***

Revenue:

Data only $44,854 $168,861 $169,582 $170,426 $171,270 $182,516 $188,800 $190,753 $193,605 $196,495 Double Play - Data/VoIP $32,956 $124,071 $124,600 $125,220 $125,840 $134,104 $138,721 $140,156 $142,251 $144,374 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 $77,810 $292,932 $294,182 $295,646 $297,110 $316,620 $327,521 $330,909 $335,856 $340,869**

Bandwidth costs $19,791 $26,443 $26,894 $27,422 $27,949 $28,477 $29,005 $29,533 $30,060 $30,588 Telephone costs $4,590 $17,305 $17,600 $17,946 $18,291 $19,765 $20,720 $21,212 $21,808 $22,414 Customer care and billing $11,768 $44,372 $45,129 $46,014 $46,900 $50,679 $53,129 $54,391 $55,919 $57,472 Network management $4,707 $17,749 $18,051 $18,406 $18,760 $20,272 $21,252 $21,756 $22,368 $22,989 Pulse Integration consulting $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 **Total direct variable costs $40,856 $105,869 $107,674 $109,787 $111,900 $119,192 $124,106 $126,892 $130,155 $133,464**

**Total direct margin $36,954 $187,063 $186,508 $185,859 $185,210 $197,427 $203,415 $204,017 $205,701 $207,405 *Direct margin per customer*** *$8.35 $42.25 $42.12 $41.97 $41.83 $40.84 $42.08 $41.79 $41.71 $41.64*

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**Dexter 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 $534 $2,929 $2,941 $2,955 $2,970 $3,142 $3,274 $3,305 $3,354 $3,404 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 ($20,574) $0 $0 $0 $0 ($2,904) $0 ($362) ($373) ($384) Payroll taxes and benefits $12,213 $45,000 $45,900 $46,818 $47,754 $47,258 $49,684 $50,496 $51,505 $52,533 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 $1,859 $1,859 $1,859 $1,859 $1,859 $1,859 $1,859 $2,324 $3,719 Pole rental $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Marketing sales $18,450 $0 $0 $0 $0 $1,690 $0 $202 $204 $206 Other operating expense $1,556 $5,859 $5,884 $5,913 $5,942 $6,332 $6,550 $6,618 $6,717 $6,817 **Total operating expenses $66,780 $159,111 $161,994 $164,942 $167,948 $168,866 $174,963 $177,865 $181,670 $186,470**

**EBITDA ($29,826) $27,952 $24,514 $20,917 $17,262 $28,561 $28,452 $26,152 $24,031 $20,936 *EBITDA Margin*** *-38.3% 9.5% 8.3% 7.1% 5.8% 9.0% 8.7% 7.9% 7.2% 6.1%*

Interest Expense $18,075 $17,673 $15,416 $13,072 $10,640 $8,114 $5,493 $8,390 $12,019 $10,156 Depreciation $30,780 $44,898 $44,898 $44,898 $44,898 $45,823 $46,301 $46,392 $46,561 $46,732

**Net income ($78,681) ($34,618) ($35,799) ($37,053) ($38,275) ($25,376) ($23,342) ($28,630) ($34,549) ($35,952)**

***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 $22.14 $23.91 $24.32 $24.79 $25.27 $24.66 $25.68 $25.99 $26.39 $26.80 Direct Margin Per Customer $20.03 $42.25 $42.12 $41.97 $41.83 $40.84 $42.08 $41.79 $41.71 $41.64 Indirect Operating Cost $36.20 $35.93 $36.58 $37.25 $37.93 $34.94 $36.20 $36.43 $36.84 $37.44 Total Margin per Customer ($16.17) $6.31 $5.54 $4.72 $3.90 $5.91 $5.89 $5.36 $4.87 $4.20

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**Dexter 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 ($78,681) ($34,618) ($35,799) ($37,053) ($38,275) ($25,376) ($23,342) ($28,630) ($34,549) ($35,952) Add: depreciation $30,780 $44,898 $44,898 $44,898 $44,898 $45,823 $46,301 $46,392 $46,561 $46,732 Change in receivables ($24,398) ($51) ($122) ($122) ($122) ($2,406) ($133) ($409) ($415) ($420) Change in payables $18,211 $3,926 $417 $422 $427 $1,158 $449 $515 $707 $561 **Cash flow to/from operations ($54,088) $14,155 $9,393 $8,144 $6,927 $19,199 $23,275 $17,868 $12,304 $10,921**

Capital expenditures ($372,227) $0 $0 $0 $0 ($10,816) $0 ($157,270) ($187,233) ($1,321) **Cash flows to investing ($372,227) $0 $0 $0 $0 ($10,816) $0 ($157,270) ($187,233) ($1,321)**

Proceeds from senior debt financing $505,916 $44,795 $0 $0 $0 $0 $0 $157,270 $187,233 $0 Principal payments on senior debt ($52,509) ($59,161) ($61,419) ($63,762) ($66,194) ($68,720) ($71,341) ($90,386) ($71,705) ($40,513) 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 $453,407 ($14,366) ($61,419) ($63,762) ($66,194) ($68,720) ($71,341) $66,884 $115,528 ($40,513)**

**Ending cash balance $27,092 $26,880 ($25,145) ($80,763) ($140,030) ($200,367) ($248,433) ($320,951) ($380,351) ($411,264)**

***Projected Balance Sheet:***

Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Year 8 Year 9 Year 10 Cash $27,092 $26,880 ($25,145) ($80,763) ($140,030) ($200,367) ($248,433) ($320,951) ($380,351) ($411,264) Receivables $24,398 $24,449 $24,571 $24,693 $24,815 $27,221 $27,354 $27,764 $28,179 $28,599

Total current assets $51,490 $51,329 ($574) ($56,069) ($115,215) ($173,145) ($221,078) ($293,187) ($352,173) ($382,665)

Property $372,227 $372,227 $372,227 $372,227 $372,227 $383,043 $383,043 $540,313 $727,546 $728,867 Depreciation ($30,780) ($75,677) ($120,575) ($165,472) ($210,370) ($256,193) ($302,494) ($348,887) ($395,448) ($442,180)

**Total assets** $392,938 $347,879 $251,078 $150,685 $46,642 ($46,295) ($140,529) ($101,760) ($20,075) ($95,978)

Payables and deferred revenue $18,211 $22,138 $22,555 $22,976 $23,403 $24,562 $25,011 $25,526 $26,233 $26,794 Bank debt $453,407 $439,041 $377,622 $313,860 $247,666 $178,946 $107,605 $174,489 $290,017 $249,504 Total liabilities $471,618 $461,178 $400,177 $336,837 $271,069 $203,508 $132,615 $200,015 $316,249 $276,298

Contributed equity $0 $0 $0 $0 $0 $0 $0 $0 $0 $0 Accumulated income/loss ($78,681) ($113,299) ($149,099) ($186,151) ($224,427) ($249,803) ($273,145) ($301,775) ($336,324) ($372,276) Total Equity ($78,681) ($113,299) ($149,099) ($186,151) ($224,427) ($249,803) ($273,145) ($301,775) ($336,324) ($372,276)

**Total Liabilities and Equity** $392,938 $347,879 $251,078 $150,685 $46,642 ($46,295) ($140,529) ($101,760) ($20,075) ($95,978)

PULSE BROADBAND – FTTH FEASIBILITY STUDY FOR DEXSTER TOWNSHIP 43

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 36% (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 $856 - $1,409 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 Dexter 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 Dexter 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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