TILSON

On a Mission

Cover Letter for JEDO May 9th, 2018 Meeting

The past 20+ years have seen tremendous developments in the use of Internet in our national and international economy and society. The communities currently in the forefront of internet services have widely-deployed access to so-called "Gigabit" internet service, largely delivered over all-fiber optic networks. These communities can lay claim to having leading-edge telecommunications infrastructure and services in their efforts to attract, retain, and improve employers and the best entrepreneurial and workforce talent. Kansas City is a well-known nearby example.

In 2014, the Kansas Department of Commerce commissioned a study that looked at the question, could Topeka achieve the market-leading levels of broadband service now found in in these communities? This study examined the underlying business case using the Gigabit Cities Model (GBCM), a modeling tool developed by CostQuest Associates, a nationally and internationally known telecommunications consulting firm. It also examined the economic impact of improved broadband services. In 2017, JEDO, hired Tilson, an independent national telecommunications consultancy and network services firm to help us examine how public-private partnerships working in our area might create just these types of infrastructure and services, in the City and/or other areas of Shawnee County.

At the same time, there are parts of Shawnee County that lack access to more basic internet services meeting the current federal definition of "broadband." Residents of these parts of the County are being left behind in their access to modern information resources and opportunities. While the negative impacts are not limited to young people, the disparity in access is an issue acutely felt in the school districts within the County that serve a rural population. This effort is also looking at how public-private partnerships using wireless technology could help providing at least a level of broadband service to these currently unserved areas that meets the federal definition of broadband service.

The first step in the current process has been to refine and validate the GBCM and economic impact study used in the 2014 study and extend the cost and business case study into areas of Shawnee County outside the City of Topeka. The current version of the Gigabit Cities Model offered the opportunity to examine not just one scenario for how Gigabit fiber network can be operated, but a range of operating models that could be used to deploy and operate fiber networks. The studied scenarios should not be read as a list of the Project Team's recommended options for implementation in Topeka and Shawnee County. The models studied may or may not be right for this community in the form laid out in the study. They do, however, represent a range of possibilities from which the Project Team is able to learn. The primary objective of this study has been to build understanding, so that JEDO and local jurisdictions are better informed during the ongoing planning process.

The results of the study are contained in greater detail within the document. At a high level, the study results identified several important conclusions for the Project Team:

- A pure private business case for deploying either a new fiber network or a new rural wireless network is challenging, especially outside the City of Topeka, but even within it.
- A long investment horizon and relatively low interest rates (such as would be consistent with public financing of infrastructure) have the potential to make a positive business case for fiber within the City of Topeka that is self-funding over the long-term. This was not the case for the study areas outside the City.

- Tilson concluded that capital costs for a City-wide fiber network are likely to be somewhat higher than estimated in the 2014 study. The total capital cost would depend a great deal on the objectives of the build-out, but are approximately $75M for a City-wide network in Topeka and $53M in Shawnee County outside of

  Topeka, if the network was operated under a conventional retail services model. Note that these estimates include costs that might to a greater or lesser degree be paid for by a private partner.

- A modern rural wireless network could be built for substantially less money than a fiber-to-the-premise network. Based on a high-level network design consisting of a large number of small pole-mounted wireless base stations providing coverage to most of the unserved locations in rural Shawnee County, Tilson has estimated the capital cost of such a network to be approximately $7.2M, the majority of which cost would actually consist of a limited fiber network connecting the base stations from which a wireless broadband signal could be transmitted to users.

- While the study's financial modeling identifies that revenues from such a rural wireless project could not cover both its capital and operating costs to make it entirely self-funding, the analysis suggests that the project could sustain itself on an ongoing basis if its up-front capital costs were partially subsidized.

- The study included a peer review of the 2014 Economic Impact Study performed by Camoin Associates, a seasoned economic development consultancy that has performed work across the country. The review concluded that the methodology of the 2014 study was sound but recommended more conservative assumptions about the magnitude of the economic impact that improved broadband services would have. With the more conservative assumptions, the projected economic impact of improved broadband is still substantial, amounting to provide an estimated net boost to the Shawnee County economy of 3.0% (for a doubling of broadband speeds) to 6.4% (for a quadrupling) over a ten-year period. This is the equivalent of an incremental 6,000-13,000 added jobs, and $732M-$1,562M in GDP over that period.

While the economic and financial model work conducted thus far and the consideration of multiple operating scenarios for a fiber network have provided important insights, it is essential that further planning work also be informed by information provided by private sector broadband service providers. The Project Team understands that there are likely providers eager to provide their perspective, and the Project Team is eager to receive it. Because this planning project may ultimately result in a formal Request-for-Proposals (RFP) and contractual arrangements between one or more local jurisdictions in the County, it has been designed from the outset to ensure that a broad range of private providers will have the opportunity to provide information. The project plan also structures the information collection process so that any of those participating will also have the opportunity to respond to a RFP, if one is issued. The Project Team therefore seeks the JEDO's authorization to proceed to the next stage in the project's plan, that is the development and issuance of a formal Request-for-Information (RFI).

An RFI would seek out critical information about potential private sector involvement. This can include what service providers may be willing to do on their own to create the broadband improvements sought, without public sector involvement. In crafting public-private partnerships, there is not an expectation that JEDO or local jurisdictions will fund all of any new network. Should potential private partners express an interest in participating in a public-private partnership, it will be important to understand what type and what level of public participation they may expect or require achieving the broadband improvements we are expecting.

No decisions about how or even whether to enter into a public-private partnership need to be made now. In fact, the RFI will build on the work of the study and further inform JEDO and our various local jurisdictions about the options available for improving broadband in the City and the County. Should the JEDO Board approve proceeding with the RFI, the Project Team would work with Tilson to craft a draft RFI for review and approval at the next JEDO meeting. JEDO could then receive a summary if the information learned at the subsequent JEDO Board meeting.

Although the Project Team with its consultants will develop the specific questions that the RFI will contain when this next step is authorized, we expect that the RFI will include questions in a number of subjects, including:

- The various roles in which various potential private partners may have interest, including network infrastructure developer/owner, financer, network operator and/or retail Internet Service Providers
- Parties' interest in and willingness to undertake action to deploy Gigabit type networks in both Topeka and the County
- Parties' interest in and willingness to provide service in unserved parts of the County, whether via fiber, wireless, or any other type of broadband network
- Parties' interest in and potential requirements from various forms of public-private partnership
- Providers' ability and willingness to make the sought improvements without investment of public funds (or very limited public investment)

We recommend that the RFI seek comment from a wide range of broadband service providers and related parties, both those currently delivering services in Topeka and Shawnee County, as well as those that might be attracted to expand into the region.

JEDO has funded this planning effort because of the important contribution broadband services make to a healthy economy as well as creating opportunities in health care, education, delivery of public services, and community interaction. The now-completed study has brought us halfway through the expected information gathering phase. Expanding the conversation to include information from potential private sector partners and collaborators is the next important step in this effort.

TILSON

Studying Broadband Solutions for Topeka and Shawnee County

TILSON

Who We Are

- Tilson is a consulting and telecom network services company with a national practice
- We work for private and public telecom network owners and funders to plan, design, build, maintain, and manage networks
- We work with states and communities who want to understand how to obtain better broadband infrastructure and services
- Approx. 400 employees, 18 offices nationwide

Why We Are Here

- JEDO has retained Tilson to advise on developing and executing a plan to create public-private partnerships suitable for realizing the City and County's broadband goals

2

TILSON

Presentation Overview

- Where we are in the Planning Process
- Overview of Financial Modeling and Economic Impact Study Review
- Overview of Request-for-Information Decision
- Questions and Discussion

3

TILSON

A Few Definitions

- Fiber-to-the-Premise (FTTP)—A type of broadband network that delivers service to homes and business entirely over fiber optic cables; Gigabit-capable
- Fiber-Wireless Network—A broadband network that uses high-capacity fiber optic cables to "backhaul" nodes that distribute broadband via wireless signals to homes and businesses
- Gigabit—Having the ability to transfer data at 1 billion bits of information per second; the highest speed levels generally available to consumers today
- Gigabit Cities Model (GBCM)—A network and financial modeling tool developed by CostQuest Associates to study the cost and business case for FTTP networks in a variety of communities; used in this study and the 2014 Study

4

TILSON

Planning Process Overview and Stakeholder Input

TILSON

Where We Are In the Process

- Step 1: Gather Information and Build Understanding
  - Part A: Internal Analysis
    - Understand the economics of potential fiber and wireless networks in the City and County
    - Review goals and priorities with stakeholders

TILSON

Goals Identified by Stakeholder Process

1. Adequate or better broadband service in unserved parts of Shawnee County
2. Spurring the introduction of leading-edge Gigabit broadband service to the region
3. Digital Inclusion: Sharing the benefits of broadband improvements as widely as possible

7

TILSON

What's at Stake

"Average" Broadband

- Essential for full participation in society and economy
- Access to:
  - Education
  - Jobs and business opportunity
  - Health care information and services
  - Social participation
- Needed to retain workforce, young people

Gigabit Broadband

- Ready for new applications / new services
- "Signaling": this is a tech-ready community with solid infrastructure
- Feature for attracting and retaining workforce and entrepreneurial talent

8

TILSON

What is up Next in the Process

- Step 1: Gather Information and Build Understanding
  - Part A: Internal Analysis
    - Understand the economics of potential fiber and wireless networks in the City and County
    - Review goals and priorities with stakeholders
  - Part B: Service Provider Engagement ←NEXT
    - Solicit input broadly through a Request-for-Information process
- Step 2: Structure a Public-Partnership FUTURE DECISION
  - Possible Request-for-Proposals, informed by the results of Step 1
- Step 3: Implementation FUTURE DECISION

9

TILSON

Financial Modeling and Economic Impact Review

TILSON

What We Studied

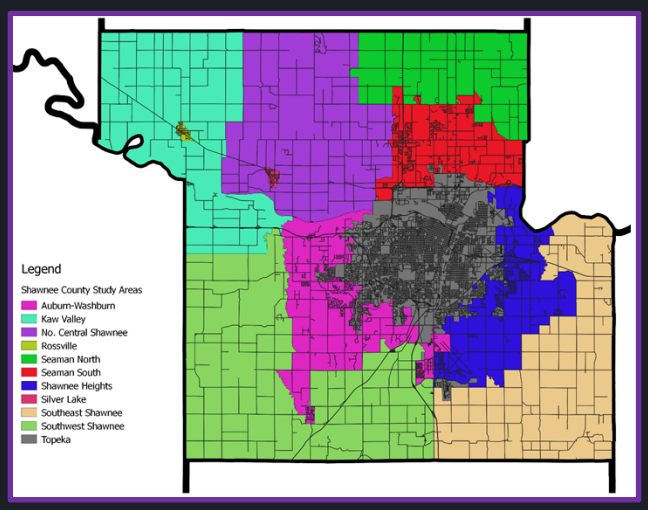
- Validated GBCM, used in the 2014 study of a new FTTP network across City of Topeka
  - Developed local cost inputs
- Extended GBCM to the rest of Shawnee County
- Ran GBCM under 4 different types operating models used in FTTP projects across the country
- Examined the business case for a rural fiber-wireless network in unserved areas
- Critically reviewed the 2014 Economic Impact Study

11

TILSON

Study Areas

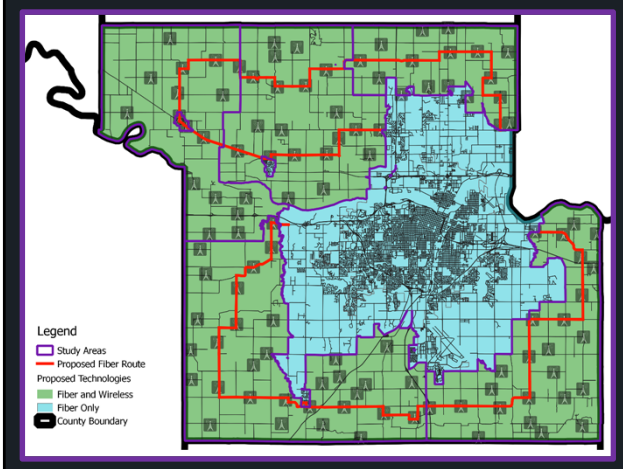
- FTTP: All Areas
- Fiber Wireless:
  - Kaw Valley
  - Rossville
  - No. Central Shawnee
  - Seaman North
  - Southeast Shawnee
  - Southwest Shawnee

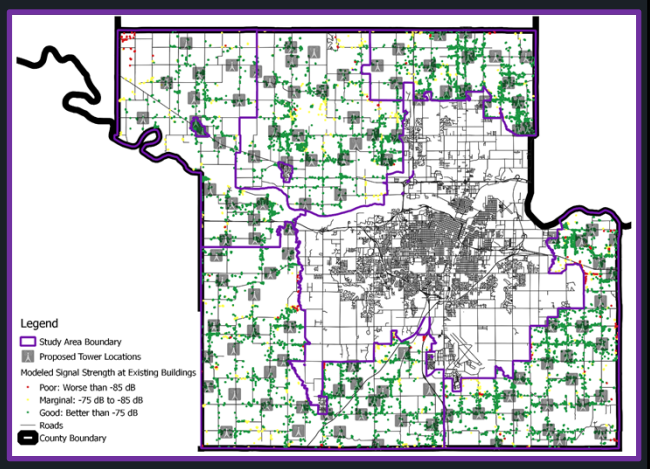


12

TILSON

Wireless Network High Level Design





13

TILSON

What We Learned from the Study

- A pure private business case for FTTP across the whole City is challenging, and even more so in the County
- Public sector interest rates and investment horizons could make the FTTP business case self-supporting over the long term in the City (but not all of the County)
- The total capital investment required for a FTTP network is substantial, and probably somewhat higher than the 2014 study concluded
- A good-quality fiber-wireless network is technically feasible in rural unserved areas of Shawnee County, and at a much lower capital cost
  - But it would still not be entirely self-funding

14

TILSON

Camoin Associates: Peer Review of Economic Impact Study

- Original study uses reasonable inputs and methodologies in general
- However, growth rate increase assumption was too aggressive, based on existing research
- Camoin Associates' revised estimate of economic impact is lower, but still positive:
  - Estimated net boost to County economy would be 3.0% (for a doubling of broadband speeds) to 6.4% (for a quadrupling) over a ten-year period
  - Equivalent to incremental 6,000-13,000 added jobs, and $732M-$1,562M in GDP

15

TILSON

Some Key Observations for Future Plans

1. Full FTTP build-out will be very expensive and may or may not be fully financially self-supporting everywhere, so consider incremental options that are self-supporting and/or fit your budget.
2. Lack of adequate broadband in rural areas of Shawnee County is a pressing need and should be a high priority
   - Fiber-wireless options can be supported at a substantially lower cost than a full FTTP build-out
3. Not every investment by a local jurisdiction will necessarily be self-supporting. To the extent capital funding is available and needed, it can be targeted to achieve:
   - Coverage in unserved rural areas
   - Investments that will jump-start additional private investments in better broadband service
   - Extending infrastructure into less-advantaged, lower-income neighborhoods or high-need economic development target

16

Provider Outreach / Request-for-Information

TILSON

Decision

Should JEDO proceed to the next phase of the study, which is to gather service provider input through a Request-for-Information (RFI) process?

TILSON

RFI Targeted Respondents

- Local incumbents
- Regional FTTP operators who may want to expand into a nearby market
- Companies seeking opportunities in mid-size markets nationally to operate FTTP networks under contract or deliver Internet service over FTTP networks
- Companies seeking opportunities nationally and internationally to develop FTTP infrastructure in a PPP
- Wireless ISPs

19

TILSON

Recommended Topics to Explore within RFI

- What are service providers willing to do without substantial public sector investment?
- Interest in and requirements for partnering with local jurisdictions who make investments in targeted fiber projects:
  - Fiber on key routes
  - Fiber to wireless nodes
  - Fiber to pockets of demonstrated consumer demand
- Roles in which various private partners have interest
  - Owner-operator
  - Infrastructure owner
  - Network operator
  - Retail Internet service provider—fiber or wireless

20

TILSON

Proposed RFI Development, Approval, and Implementation Process

- May 2018: JEDO approves development of RFI
- May-August 2018: Project Team develops draft RFI
- Sept. 2018: Proposed RFI submitted to JEDO for review and approval
- Sept.-Oct. 2018: RFI issued; outreach to encourage responses
- Nov. 2018: Summary of RFI results to JEDO and discussion of next steps

21

TILSON

Questions and Discussion

Reviewing the Business Case and Economic Impact of Broadband Alternatives for Topeka and Shawnee County

prepared for

City of Topeka and Shawnee County, Kansas

Joint Economic Development Organization

April 2018

TILSON

16 Middle Street, 4th Floor

Portland, Maine 04103

(207) 591-6427

Contents

1 Executive Summary

JEDO has retained Tilson to evaluate the feasibility of several potential business models for enabling a new broadband network in the City of Topeka and Shawnee County.

This work has been ongoing since 2014, when the Kansas Department of Commerce commissioned an economic impact study of the installation of a high-speed broadband network on the City of Topeka and Shawnee County (the "2014 Impact Study"). As part of that work, Vision360, an economic consulting firm, developed an assessment of the economic impact to the County of a potential broadband network. In addition, the economic modeling firm CostQuest developed a financial model for a potential Gigabit broadband network solution in the City of Topeka using its tool the Gigabit Cities Model (GBCM).

In this phase of the project, the Topeka and Shawnee County Joint Economic Development Organization (JEDO) would now like to formulate and execute a plan to form public-private partnerships necessary to build and operate a fiber-to-the-premise network or wireless ISP infrastructure within the City and County. Unlike the previous iteration, which focused on a solution exclusively for the City of Topeka, JEDO has sought evaluation of solutions for the entire county. The planning process underway includes multiple phases. This report is a product of the first phase of the project, in which we examine, update and extend some of the analysis produced in the 2014 study. In parallel, Tilson has worked with the local Project Team assigned by JEDO to engage community stakeholders. Future phases in the project include a potential Request-for-Information to collect information from private broadband service providers and other potential private partners, potentially followed by a Request-for Proposals seeking partnerships between one or more local jurisdictions on a more specific project.

Leading up to this report, Tilson validated the mechanics of the GBCM and used its engineering expertise to provide updated cost inputs specific to the Shawnee County and Topeka region. We worked with CostQuest to extend the GBCM in several ways. We examined the business case in study areas throughout the County, both within and outside the City of Topeka. We used the option now available within the GBCM to examine the business case under different types of operating models for fiber optic network. We also examined the business case for a fiber-wireless network in rural and unserved parts of Shawnee County.

We explored five discrete operating models, four for a potential City- and County-wide fiber to the premises (FTTP) network, and one for a hybrid fiber-wireless network in rural parts of the County.

- Private Retail ISP on Private Network would be the expected base case for a private company to enter the market as a FTTP provider without public sector involvement or assistance
- Private Retail ISP on Public Network, where a public entity would build its own network – either one capable of servicing the entire county, or one that could form the nucleus of a county-wide network – and hire a private ISP to offer service
- Open Access Lit, where a public entity would build its own network and offer lit transport services to retail ISPs interested in offering service to end users
- Dark Fiber, where a public entity would build its own network and lease fiber strands to interested ISPs wishing to offer their own services to end users
- Hybrid Fiber-Wireless Option, where a public entity would build a FTTP network in areas of Shawnee County that currently have access to average broadband service, and a wireless network to serve other areas of the County that are substantially underserved.

At this point in the analysis, no specific local sponsor (neither JEDO nor any particular local jurisdiction) is identified for the projects in these scenarios.

The economic modeling of these five scenarios permits a number of high-level conclusions:

- A business case for deploying a new fiber network entirely with private capital is challenging, especially outside the City of Topeka, but even within it.
- The scenarios premised on public financing of fiber infrastructure show the potential to make a business case for fiber within the City of Topeka that is self-funding over the long-term. These scenarios assume a long investment horizon and relatively low interest rates for the network owner. The economics for a similar undertaking in unincorporated Shawnee County are far more challenging. -.
- Capital costs for a City-wide fiber network are likely to be somewhat higher than estimated in the 2014 study. The total capital cost would depend a great deal on the objectives of the build-out, but are approximately $75M for a City-wide network in Topeka and $53M in Shawnee County outside of Topeka, if the network was operated under a conventional retail services model.
- A high-level design for a fiber-wireless network providing coverage to most of the unserved locations in rural Shawnee County generated a capital cost of approximately $7.2M. The majority of this cost would actually consist of a limited fiber network connecting the base stations from which a wireless broadband signal could be transmitted to users.
- While the modeling identifies that revenues from such a rural wireless project could not cover both its capital and operating costs to make it entirely self-funding, the analysis does suggest that the project could sustain itself on an ongoing basis if its up-front capital costs were partially subsidized.

Economic Impact Study

As part of this work, Camoin Associates, a subcontractor to Tilson, conducted a peer review of the 2014 Impact Study to validate or refute the methodology and assumptions used in that study. Camoin concludes that the 2014 Impact Study was methodologically sound and reasonable, given the difficult topic of quantifying the economic impacts of prospective broadband investments. However, Camoin believes that the assumed incremental increase in GDP over the ten-year period of between 5%-15% resulting from those broadband investments, while possible, is potentially overstated. Instead, Camoin would have used less aggressive assumptions of between 3%-6.4% based on the best available research to-date. These less aggressive assumptions would have resulted in a forecast job growth of roughly 6,000-13,000 jobs in lieu of the 2014 Impact Study's 9,800-29,000 jobs figures. The revised economic impact is equivalent to an incremental $732M-$1,562M in GDP.

2 Introduction

The City of Topeka recognizes that the availability of fast, reliable, affordable internet service is required to ensure its continued competitiveness in the 21st century. Broadband is essential infrastructure that supports business creation and growth; this leads to attracting and retaining young people and families in a community. Broadband is also critical infrastructure for a community: public safety, education, health care, and employment searches rely on reliable, performant broadband networks.

In 2013, the Intergovernmental Cooperation Council agreed to work on developing ways to ensure that reliable, high-speed internet access was available to the entire Topeka community. Two years later, in 2015, Mayor Larry Wolgast convened a Broadband Task Force charged with developing an RFP for broadband consulting services. Managed by JEDO, the RFP sought responses from qualified companies to provide a road map to implementing the kind of reliable, high-speed broadband network that Topeka and greater Shawnee County require to remain competitive in the 21st century and beyond.

Previous Work Overview

Previous work has been done in both financial modeling and economic impact analysis of a potential broadband network, with the stated goal of advancing the region's economic and community development, as well as quality of life, through improving countywide access to and utilization of broadband. As a part of that endeavor, CostQuest, the leading telecommunications economics consultancy, previously modeled a fiber-to-the-premises (FTTP) network serving Topeka. The results were that the network would require approximately $62 million in initial capital costs. It would yield a profit of approximately $2 million per year based on an assumed 40% take rate. That is, it was assumed that 40% of Topeka residents would subscribe to service.

2014 Economic Impact Study

The City of Topeka and Shawnee County were selected as a pilot community to address high speed broadband service delivery by the Kansas Department of Commerce (KDOC) in August of 2014 as part of the Kansas Department of Commerce Statewide Broadband Initiative. As part of this selection process, KDOC commissioned an economic impact study of the installation of such a network on the City and County (the "2014 Impact Study"). This study was conducted by Bill Gillis as a subcontractor to CostQuest, Inc.

The Topeka and Shawnee County Joint Economic Development Organization (JEDO) would now like to formulate and execute a plan to form public-private partnerships necessary to build and operate a fiber-to-the-premise network or wireless ISP infrastructure within the City and County. As part of its due diligence, JEDO commissioned Camoin Associates, as a subcontractor to Tilson Tech, to conduct a peer review of the 2014 Impact Study to validate or refute the methodology and assumptions used in that study. Camoin's peer review of the 2014 Impact Study consisted of the following:

- Review the methodology,
- Review the key assumptions,
- Conduct a brief literature review of similar studies,
- Provide an opinion as to the validity of the methodology and assumptions used, and
- If alternate assumptions or methodologies are recommended, to note how such alternate assumptions would likely change the results of the analysis.

Camoin Associates' scope was limited to the above and, specifically, did not include undertaking a new impact analysis.

Current Status

JEDO is currently looking to better understand the project parameters of a potential broadband deployment not only within the Topeka city limits, as initially envisioned, but for all of Shawnee County. The current engagement includes CostQuest to re-run its financial model based on updated model inputs provided by Tilson, and Camoin Associates to review and comment on the previous economic impact study by Vision360.

In addition to validating and updating the prior studies, Tilson has been engaged to expand upon them. Specifically, this report discusses broadband feasibility in all of Shawnee County, not just Topeka. It expands to include a wireless option in rural areas in the even that an all-fiber solution is deemed too expensive. We will recommend a target network design and operating model, and some alternatives.

In later phases, this could be further extended to collecting current construction market information by preparing an RFI and evaluating responses. Then, a formal RFP process would ensue to identify a construction vendor. Additional items could include an examination of grant funding opportunities and mechanisms to hand off a completed network to a suitable taxing jurisdiction for implementation and operation.

Goals

The overall, long-term goal of JEDO's work is to identify the parameters under which a county-wide broadband solution could be implemented. This specific work product is intended to execute on the goal identified by JEDO in its RFP:

> *To assist JEDO to formulate and execute a plan to form public-private partnerships necessary to build and operate a fiber to the premise network within the City of Topeka, and/or to build and operate fiber to the premise networks within the rural townships of Shawnee County and/or to build and operate a wireless internet service provider infrastructure within the rural areas of Shawnee County.*

The resulting plan's objective is to address the region's economic and community development, as well as quality of life, through improving countywide access and utilization of sufficient, reliable, and affordable broadband infrastructure. Regardless of a resident's location in Topeka or Shawnee County, they should have equal access to high speed internet at a reasonable price.

3 Business Case Analysis

The business case analysis uses CostQuest's Gigabit Cities Model (GBCM) to model each business case that Tilson and JEDO have agreed to analyze. CostQuest is a leading telecommunications economics consultancy, and their GBCM is used across the industry to model telecommunications investments. The GBCM is a complex, multi-variable Microsoft Excel workbook. While it has capabilities to model virtually any telecommunications investment, CostQuest customized it for JEDO's needs. The model takes as inputs a variety of assumptions about the area and network to be modeled, including:

- Demographic details of Topeka and Shawnee County
- Project financing, including potential grants and the impact of public vs. private funding mechanisms
- Capital costs of the network
- Operation and maintenance costs
- Revenues from disparate sources, depending on the operating scenario modeled

Using the various inputs, the model produces a comprehensive series of cash flows, income, and loan amortization outputs, along with summary data, to demonstrate how the modeled project would perform. This data can be used to answer questions such as:

- Is the project a good investment? What kinds of investors would be interested in taking part?
- Does the project require a capital subsidy?
- Once built, would the project be able to support itself on its revenues (i.e., pay its debt obligations and pay for maintenance/operation)? Would it require an operating subsidy?

Approach to Gigabit Cities Model Validation

We employed a two-pronged method to validating the model: first, we verified that the model's mechanics worked as expected, and then we validated the cost factors used in the model. Cost factors will be discussed in the next section.

To validate the model's mechanics, we employed a "top-down" methodology. We started with the model's outputs of projected cash flows. For each line item in the scorecard and business case sheets, we traced the calculations through the model until we arrived at either a user input field or a static lookup value. At each stage, we verified that formulae calculated what they were supposed to.

In summary, the GBCM works as expected. We discovered a small number of inconsistencies. The most serious was an Excel formula error caused by an invalid lookup function on the Neighborhood Master sheet. This error did not, however, impact the financial calculations in the model output, and CostQuest issued an updated model with a corrected function.

Unit Cost Validation

Tilson validated the unit costs for key cost drivers in the Gigabit Cities Model. The updated costs reflect current market prices for each cost in the Topeka area. Where possible, we sourced bids from multiple contractors active in the Topeka area. We then applied our internal knowledge of construction project costs and management to arrive at an all-in-one unit cost that reflects not only labor and materials, but also project management expenses.

Tilson extracted unit costs from the model for the items listed in Table 1.

Table 1 — Unit Costs of Fiber Network

Cost Area	Sub-Area	Unit of Measure	Unit Costs		
			Original	Tilson Revised	With Downtown Adder
ONT		Per Levelized Working Customer	$237.74	$466.77	NA
Drop		Per Levelized Working Customer	$108.96	$374.00	$402.50
Fiber Distribution Terminal		Per Terminal	$256.20	$713.90	$699.00
Fiber Distribution Terminal		Per FDR/DIST Foot	$1.21	$3.36	$3.29
Aerial Fiber		Per Foot	$2.81	$4.61	NA
Buried Fiber (Direct Burial)	Cable Only	Per Foot	$1.65	$4.59	NA
	Trenching and Burial	Per Foot	$5.05	$2.75	$275.00
Buried Fiber (In Conduit)	Cable Only	Per Foot	$3.71	$4.04	$3.97
	Conduit, Manholes, and Trench	Per Foot	$10.26	$4.93	$153.21
Pole	Licensing and Make Ready	Per Foot	$3.62	$4.71	NA
Fiber Service Terminal	Hardwired	Per Terminal	$19,024.86	$22,983.00	NA
Fiber Service Terminal	Plug-in	Per Terminal	$29,890.50		
Fiber Service Terminal	Hardwired	Per FDR/DIST Foot	$1.01	$1.12	NA
Fiber Service Terminal	Plug-in	Per FDR/DIST Foot	$1.59		
OLT	Hardwired	Total	$1,581,040.19	$1,637,460.00	NA
OLT	Plug-in	Total	$3,100,747.25		
Router		Total	$2,845,515.81	$2,163,763.80	NA
Land		Per Levelized Working Customer	$35.65	$26.09	$30.79
Building		Per Levelized Working Customer	$48.35	$95.91	NA

Tilson validated cost factors using a variety of methods, depending on the cost factor:

- Construction line items, such as fiber and trenching prices, were arrived at by checking prices with local construction and material vendors active in the Topeka area.
- Equipment prices, including OLTs and ONTs, were provided by Calix, a market leader. These consisted of a per subscriber estimate for materials and a labor estimate based on performance of past projects on a per subscriber basis.
- Building and real estate data were generated based on Tilson's extensive real estate and permitting data nationwide, as well as additional data researched for this project.

The GBCM includes a representation of the modeled network that is suitable for modeling financial information but not for arriving at construction-level pricing. As part of the process for determining unit costs, we also converted the model's representation of a network into parameters that would be suitable for inclusion in an RFP for construction services. These include items like network length, percent aerial, burial, and conduit. Next, we contacted two construction contractors active in the Topeka area and requested estimates on constructing the defined network. Using an average of the responses, we arrived at current, validated, market rates for the unit costs identified above.

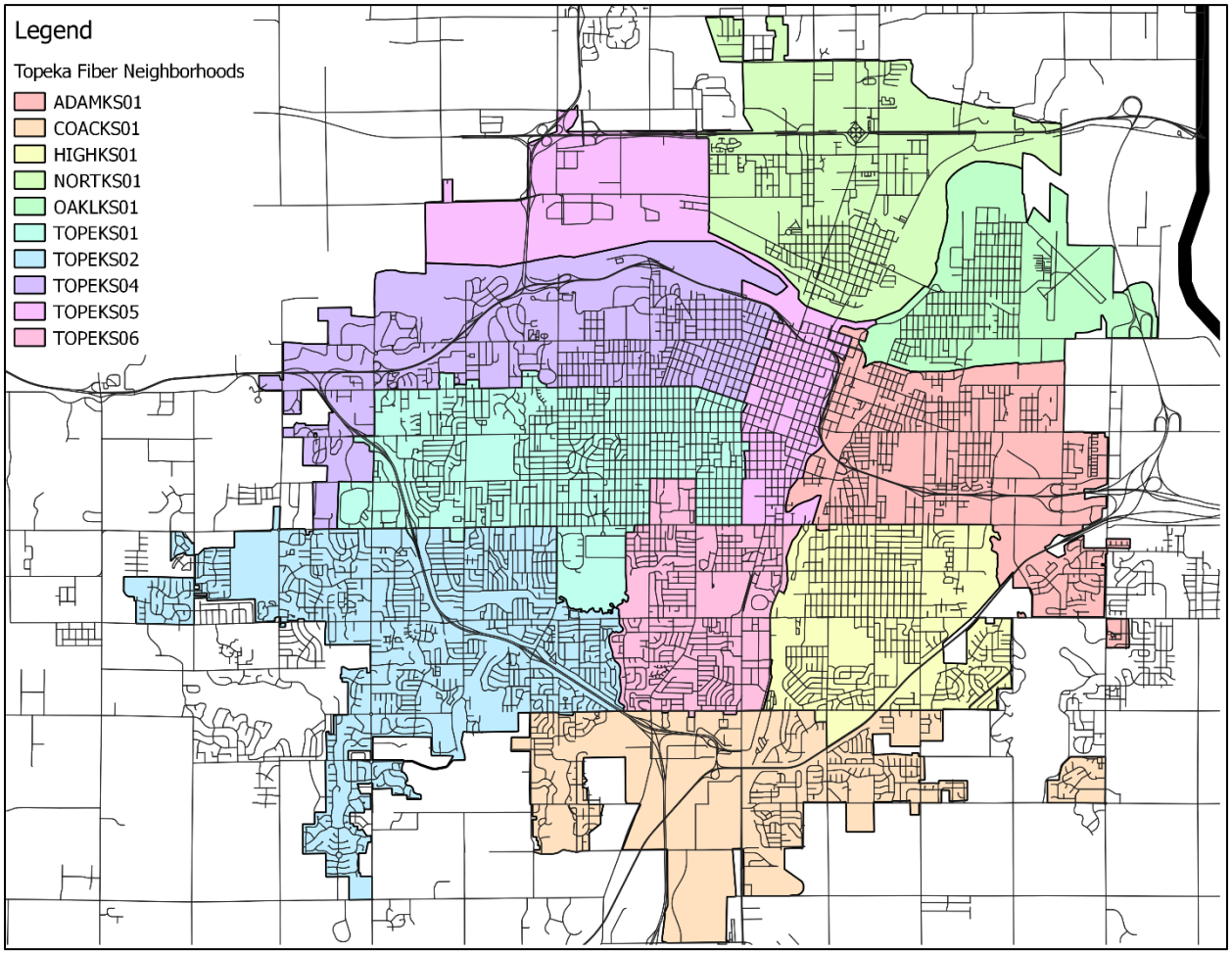


Figure 1 — Topeka Neighborhoods Modeled

Areas Modeled

The GBCM's base geographical unit is the neighborhood. Each neighborhood has attributes used in generating the model, such as population and income. Figure 1 is a map of the neighborhoods used in the model within Topeka city limits[1].

Figure 2 below shows the areas of Shawnee County, outside of Topeka, that were modeled.

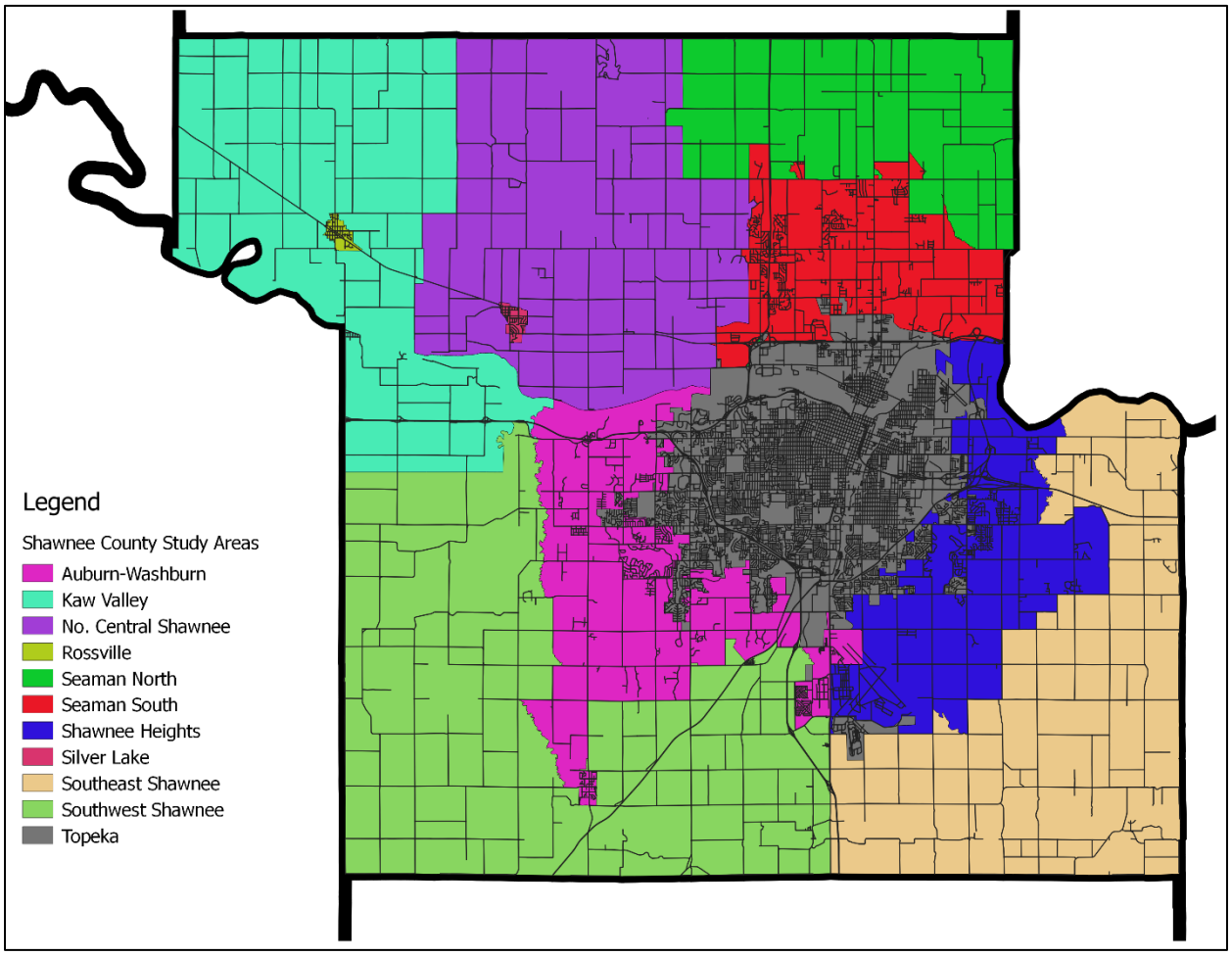


Figure 2 — County Areas Modeled

Demand Assumptions

In all scenarios, modeled demand is driven by income level. The Pew Research Center's published rates of broadband penetration by income level are modeled with demographic data in each study zone to arrive at per-zone rates of broadband demand. These are then aggregated to the entire model. Table 2, below, shows the total aggregate demand for broadband services modeled by income level. It also shows the ramp-up of demand in the model over the first ten years. In general, the model assumes that

[1] The TOPEKS03 study area (located south of the airport; not shown in the figure) was eliminated from the study because it contains only one serviceable premise.

that the provider(s) achieve(s) about one-third to one-half of their ultimate take rate in the first year (less for businesses and lower-income households, more for higher-income households), and gain customers until achieving their ultimate forecast market share by Year 6 for businesses and upper-income households, and Year 7 for lower-income households.[2]

The "Estimated Broadband Market Penetration" column shows the total percentage of households or businesses in each income bracket that subscribe to broadband services. The values in the "End of Year Market Adoption of New Entrants' Service" show how the new retail provider's customer base builds to its total projected market share.

Table 2 — Aggregate Broadband Demand and Ramp-Up by Income Level

				Please enter the expected end of year customer adoption for the New Entrant (e.g., a value of 30% indicates that the new Entrant will capture 30% of its total expected market by the end of the year specified, values should reach 100% at some point)									
				End of Year Market Adoption of New Entrants Service									
			Estimated Broadband Market Penetration	1	2	3	4	5	6	7	8	9	10
Business	All Businesses		95.0%	30.0%	75.0%	85.0%	90.0%	95.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Residential Market by Average Income	Low	High	Total Market										
	-	30,000	57.0%	40.0%	65.0%	72.5%	75.0%	80.0%	85.0%	90.0%	100.0%	100.0%	100.0%
	30,000	50,000	75.5%	42.5%	67.5%	75.0%	80.0%	85.0%	90.0%	100.0%	100.0%	100.0%	100.0%
	50,000	75,000	87.5%	45.0%	72.5%	80.0%	85.0%	90.0%	95.0%	100.0%	100.0%	100.0%	100.0%
	75,000	10,000,000	94.0%	47.5%	75.0%	82.5%	87.5%	95.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Within this total, the model also considers the overall competitiveness of the Topeka market for broadband services. Table 3 shows the baseline levels of competition modeled between the given incumbent provider type on the left, and the proposed County-wide solution. For example, the figure of 25% in the table for the Residential DSL competitiveness means that the County-wide solution would gain four customers for every one customer who would select DSL.

Table 3 — Modeled Competition Levels

	Res	Bus
Cable Market Equivalent	90.00%	80.00%
Fixed Wireless Market Equivalent	2.50%	1.00%
DSL Market Equivalent	25.00%	50.00%
HSIA Market Equivalent	65.00%	75.00%
Fiber Market Equivalent	100.00%	125.00%
Wireless Market Equivalent	5.00%	2.50%

[2] In the Open Access Lit model, demand for low-speed service is 100% right away, so the ramp-up only applies to high-speed service. See Section 4.4.

In addition to considering how demand for broadband services will vary by income, as shown in Table 2, the model also considers how income will affect the demand for low speed vs. high speed data services. Demand modeled within each income bracket is shown in Table 4 below, which shows the assumed demand for low-speed data, high-speed data and voice ("Carrier provided CVoIP) services. Demand for low and high speed data sums to 100%, since the model assumes that all premises served by the network will receive either one or the other. In the below, for example, 10% of residences with income between $50,000 and $75,000 will use the low speed data option, while 90% will opt for the high-speed service. In addition, voice services are assumed at a 35% take rate across all income brackets.[3]

Table 4 — Demand Breakdown by Data Speed and Voice Service

Please enter the Service Mix for the New Entrant
(Values in green should sum to 1 in each row)

			% Low Speed Data	% High Speed Data	*% Carrier provided CVoIP*	*% Other Services*
Business	All Businesses		10.0%	90.0%	35%	0%
Residential Market by Average Income	Low	High				
	-	30,000	35.0%	65.0%	35%	0%
	30,000	50,000	25.0%	75.0%	35%	0%
	50,000	75,000	10.0%	90.0%	35%	0%
	75,000	10,000,000	5.0%	95.0%	35%	0%

[3] Section 4 identifies how the model attributes revenue, derived from different services, differently under various operating scenarios. The Open Access and Dark Fiber scenarios do not use a voice service take rate because it does not affect the revenue of the network owner in those scenarios.

4 Operating Scenarios Modeled

Overview

This section discusses four business model scenarios for operating a City or County-wide FTTP network that the GBCM can produce. These scenarios represent a range of options under which such a network could be operated and that various communities have pursued. At this stage in the planning process, we present these scenarios as part of a financial modeling exercise that can provide useful information about the economics of a FTTP network in the County or the City. We do not present these scenarios as a final recommendation that JEDO or another local jurisdiction should pursue exactly as described. The business models selected herein are intended as guideposts. The boundaries between them are also not absolute, since each scenario can consist of a range of possibilities. For example, "operating" a network can consist, in part, of building a Network Operations Center and hiring staff to run it, hiring an outside company to do the same thing, or anything in between.

In thinking about the operating structures involving public-private partnerships, it is vital to bear in mind that the parameters of these partnerships are open to substantial negotiation. There are myriad ways to structure these agreements. These can address, for example, responsibility for paying operating costs, revenue sharing, payment arrangements, service levels, speeds, network build-out, prices, or other factors that help the community partner address its goals. Another important consideration is payment structures. The local public partner would need to come to an agreement with an owner or operator on how each entity gets paid. These arrangements could consist of a set fee, minimum or maximum amount, percent of revenue, or no revenue sharing but using Shawnee County's negotiating leverage to achieve the best deal for residents.

Table 5 – Ownership and Operational Models

Model	Ownership	Who operates facilities	Who takes operating risk	Who gets revenue
Private Retail Owner-Operator	Private ISP	Private ISP	Private ISP	Private ISP
Private Operator on Public Network	City/County	Private ISP	Private ISP (and possibly City/County)	Private ISP (and possibly City/County)
Open Access Lit	City/County	City/County	City/County	City/County and Private ISPs
Dark Fiber	City/County	City/County and Private ISP	Private ISP (and City/County to a lesser extent)	City/County and Private ISPs

Table 5 provides the parameters of each operating model. Each of these operating models implies differing levels of public responsibility and ownership. In addition, the County's level of operational responsibility is a function of both the capital cost strategy and the operating model. For example, a local public partner would have a considerably less complex set of duties to perform (or contract for) with a dark fiber network than for a lit fiber network. Shawnee County and Topeka City leaders, in consideration of residents' needs and desires, can determine each model's suitability for the city's needs and comfort with risk and ownership profiles.

The remainder of this section examines each of the four business models. Each model has a short name that is used in the Gigabit Cities Model. The table below shows the GBCM short name and a brief description of the model.

Table 6 — Business Models Summary

Operating Model	GBCM Short Name	Description
Private Retail Owner-Operator	Retail NoStructure	Private ISP builds, owns, and operates network
Public Network, With Option for Private Operator	Retail WithStructure	Network built with public funds and operated by either public entity or private ISP
Open Access Lit Service Provider	Open Access	Public entity builds network and provides wholesale lit transport to retail ISP(s)
Dark Fiber	Dark Fiber	Public entity builds network and leases dark fiber to retail ISP(s)

For the purpose of this exercise, the model assumes a relatively simple set of service offerings. In the first three scenarios, it assumes that users have the opportunity to receive a high-speed (Gigabit) data service, a low-speed basic internet service, (10 Mbps), and a voice telephone service. In the case of the two "Retail" scenarios, the model assumes that the network operator provides the low-speed data service for the price of a one-time installation fee, but no recurring costs. In the "Open Access" model, the model assumes that a funding mechanism other than user fees is used to pay for the cost of the network and the low-speed data service, which is made available to all premises at no additional cost. This assumption about low-speed data service represent a public-private partnership, or an agreement with a private operator, that seeks to provide at least a basic benefit to all in the County or City.

In all of these scenarios users may upgrade to the high speed service and/or add voice at an additional cost. In the two "Retail" scenarios, customers sign up with the ISP operating the network and the network owner retains the revenue from the additional services. In the Open Access scenario, the network owner simply delivers the high-speed data or voice traffic to a point of interconnection with the end user's choice of ISP. The ISP receives the revenue form the end user from these additional services, but provides a share back to the network owner.

In the "Dark Fiber" scenario, the service offerings are even simpler from the point of view of the network owner. The network owner simply leases dark fiber optic strands connecting buildings in the City or County to ISPs as a wholesale service. The ISPs then light up these tiny glass lines using their own equipment to provide services of their choosing to end users. The services offered by the ISPs to the end users (their customers) can include the same low-speed data, high-speed data, voice services, or any other communications services that the ISP chooses to sell. The model assumes that the network operator charges the same base fee per premise that the ISP connects using the dark fiber network, except that dark fiber connections used by the ISP to provide high-speed data service would be subject to a small additional revenue-sharing surcharge.

4.1.1 Take Rate Calculations

A vital statistic in the below sections is take rate. Take rate is the average percentage of customers who subscribe to service. It can be calculated in multiple ways. The below figures, however, show differing modeled take rates within the Subscriber Statistics tables. These take rates are calculated as follows: each neighborhood's modeled take rate, based on general income data, is multiplied by the number of

residences in that neighborhood. Then, the sum of these neighborhood-level take rates is divided by the total number of residences across all study areas to arrive at a single, integrated estimation. In other words, as noted in each table, these take rates are market-wide approximations, levelized over the first ten years of the project life. Different products – such as low-speed or high-speed data, or voice services – will have different take rates, but they roll up into this average value.

Private Retail Owner-Operator (Retail NoStructure)

4.1.2 Description

In this scenario, a private service provider builds, extends, or delivers service over a network that it owns and operates itself. This scenario represents a "base case" of the economic viability for a FTTP network in the region, absent substantial public intervention. City or County involvement in the project is minimal, and may be limited to activities such as serving as an anchor customer of the network, or streamlining permitting and access to required elements such as rights of way.

Operating Costs

The ISP assumes the costs of operating the network. This includes physical maintenance and operation of the fiber, as well as customer-facing operations. The ISP would also receive all the user fees charged to subscribers. The County would not be directly exposed to the network's operating costs

Risks

This type of scenario minimizes the direct financial risk to the local jurisdictions. The greater risk under this model is that it may have the least difference from the status quo situation, and therefore the greatest risk of not achieving results that are very different from the status quo.

Control

The City and County would have essentially no direct control of the network or what services offered over it would be. Their ability to influence the outcome would be limited to whatever concessions a private operator might agree to for any limited incentives offered.

4.1.3 Key Assumptions

The project is funded by private capital, with a timeframe for return of capital and margin on the capital investment made accordingly.

The ISP providing service would provide two tiers of internet access, a lower-speed one and a higher-speed one, as well as an optional phone service. No video service is contemplated at this time, since content licensing fees can be prohibitively expensive, especially for smaller providers. Also, most popular video content is available to stream via various platforms. Prices modeled for service are shown in Table 7.

Table 7 — Private Retail ISP and Network Fee Structure

Service	Residential		Business	
	Monthly Charge	Installation Fee	Monthly Charge	Installation Fee
Higher-Speed Data (1 Gbps)	$70	$300	$100	$300
Lower-Speed Data (10 Mbps)	$0	$300	Not Available	Not Available
Telephone (per line)	$20	N/A	$20	N/A

For each area modeled, the GBCM determines an average internet take rate based on that neighborhood's average income. These correlations of internet subscription rates and income are published by Pew Research.

This scenario assumes 75% equity financing, with the remainder debt at 5.5% interest.

4.1.4 GBCM Output Summary

4.1.4.1 Total Capital Expenditure

The Gigabit Cities Model tracks three types of capital expenditure: up-front, success-based, and replacement. Up-front capital is the funding required to initially construct the project. Success-based capital is dependent on how many users sign up for service. An example of a success-based capital cost would be electronics at subscriber premises. Lastly, replacement capital is required periodically over the life of the network to replace or repair broken or outdated equipment and infrastructure.

The total initial investment, including up-front and success-based capital, is shown in the table below.

Table 8 — Capital Expenditure - Retail NoStructure Scenario

	Topeka	Outside Topeka	Total
Base Capital Cost	$52,445,782	$42,857,123	$95,302,905
Success-Based Capital	$22,703,119	$10,396,882	$33,100,001
Total Initial Investment	$75,148,901	$53,254,005	$128,402,906

4.1.4.2 Subscriber Statistics

The below two tables show key statistics modeled for the Topeka network and the greater Shawnee County network. Total Locations is the sum of housing units and businesses in each study area. Total Subscribers is the sum of Residential and Business subscribers after the take rate ramp-up is complete. The Assumed Take Rate is a levelized average over the project's first ten years, based on the income-based broadband subscription rates previously described for each neighborhood in the study area. The Total Subscribers number divided by the Total Locations is an alternative way to calculate take rate, which reflects the final and highest take rate modeled.

Within Topeka

Total Locations:	70,246.00	Housing Units:	59,670.00	Business Locations:	10,576.00
Assumed Take Rate:	39.4%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			
Total Subscribers:	24,797.30	Residential:	20,211.50	Business/Orgs:	4,585.80

Outside Topeka

Total Locations:	22,653.00	Housing Units:	20,108.00	Business Locations:	2,545.00
Assumed Take Rate:	37.3%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			

Total Subscribers:	8,074.42	Residential:	7,175.92	Business/Orgs:	898.51

4.1.4.3 Business Case Summary

Below are three tables for each model: within Topeka and Shawnee County outside City limits. The first table shows key financial performance metrics of the network.

- Annual contribution margin is the difference between annual costs and annual revenue. Contribution margin is the net cash flow of the network. A negative value shows the average annual subsidy required to sustain the network, while a positive one shows the average amount of free cash generated.
- Net present value of the project's 30-year cash flows is a quick way to gauge the attractiveness of the modeled network as an investment and compare it to others.

The second table shows statistics per active subscriber. The first two rows, Capital per Active Line and Net Non-Recurring Cost per line, show one-time, nonrecurring costs incurred by the project divided by each active subscriber. The following rows show modeled revenue and cost per active line. Costs are further broken down into capital and operating expenses. The difference between the two, the Levelized Monthly Contribution, is the per-subscriber subsidy required (if negative) or cash generated (if positive).

Finally, the third table shows the first ten years of two key accounting metrics, net income and free cash flow. Net income is accounting profit, which includes depreciation and debt service, among others. Free cash flow is total cash generated and can be best thought of to show whether the project can sustain its own operations: negative free cash flow represents a subsidy required, while positive free cash flow represents cash generated. If a project has negative free cash flow and then positive, it would only need a subsidy for the first few years. This is also the case where the project may not be required to pay back its debt (such as if capital costs were paid for by a non-revenue bond, for example).

Within Topeka

Total Annual Costs:	$17,819,024	Annual Capital Costs:	$9,124,902	Annual Operational Costs:	$8,694,121
Annual Revenue:	$16,200,063	Annual Contribution Margin:		($1,618,961.14)	
Net Present Value of 30 Year Cash Flows			($24,576,865)		

Per Active Subscriber Statistics	Capital Per ACTIVE line	$4,049.61
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	$36.75
	Total Monthly Revenue Run Rate per ACTIVE line	$72.75
	Total Monthly Cost per ACTIVE Line Run Rate	$80.02
	Monthly Capital Costs per ACTIVE line	$40.98
	Monthly Operating Expenses Per ACTIVE line	$39.04
	Levelized Monthly Contribution per ACTIVE line Run Rate	$(7.27)

Breaking into the first ten years of cash flows shows the following:

Year	1	2	3	4	5	6	7	8	9	10
Net Income	(6,930,823)	(7,187,757)	(3,820,730)	(1,676,313)	(562,999)	1,275,565	3,078,260	3,601,807	3,670,013	3,686,085
Free Cash Flow	(52,445,782)	(12,432,837)	(3,735,355)	4,269,223	5,095,001	5,044,849	4,781,663	4,146,303	5,870,910	5,810,339

Outside Topeka

Total Annual Costs:	$10,879,324.61	Annual Capital Costs:	$6,338,181.51	Annual Operational Costs:	$4,541,143.10
Annual Revenue:	$5,761,313.03	Annual Contribution Margin:		($5,118,011.58)	
Net Present Value of 30 Year Cash Flows		($55,416,284)			

Per Active Subscriber Statistics	Capital Per ACTIVE line	$8,411.64
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	$32.38
	Total Monthly Revenue Run Rate per ACTIVE line	$75.83
	Total Monthly Cost per ACTIVE Line Run Rate	$143.20
	Monthly Capital Costs per ACTIVE line	$83.43
	Monthly Operating Expenses Per ACTIVE line	$59.77
	Levelized Monthly Contribution per ACTIVE line Run Rate	$(67.37)

Breaking into the first ten years of cash flows shows the following:

Year	1	2	3	4	5	6	7	8	9	10
Net Income	(6,338,951)	(8,033,241)	(5,855,984)	(4,368,277)	(3,863,193)	(2,669,306)	(1,628,755)	(1,505,111)	(1,470,533)	(1,541,807)
Free Cash Flow	(42,857,123)	(6,826,280)	(2,362,687)	484,150	399,630	4,484	(93,774)	55,484	(149,947)	(344,706)

While the City project eventually makes an accounting profit after the fifth year, it also becomes self-supporting after the third year. The County project does not make an accounting profit over its lifetime, but it does become self-supporting a few times after the third year. The two projects combined, however, can pay for their own operations.

4.1.4.4 Network Area Summary

The Network Area Summary shows the results for each neighborhood or study area modeled. It is intended to provide a better understanding of which areas tend to push the business case to a more positive one, and which ones require more support. Areas can have a negative contribution margin but a positive net present value because the net present value calculation in this table assumes that all the network's assets will be sold after 30 years. In evaluating the individual areas, it is more conservative and reflective of real-world operating considerations to focus on the annual contribution margin.

Within Topeka

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	64,607	24,797	$17,819,023.73	$16,200,062.60	($1,618,961.14)	
ADAMKS01	4,603	1,312	$1,166,762.69	$756,246.35	($410,516.33)	Adams Heights
COACKS01	4,370	1,789	$1,239,802.83	$1,216,412.91	($23,389.92)	Coachlight Village s South
HIGHKS01	6,363	2,303	$1,677,943.32	$1,316,104.38	($361,838.94)	Highland Park
NORTKS01	3,873	1,545	$1,188,339.32	$955,694.80	($232,644.52)	North Topeka
OAKLKS01	2,851	1,090	$777,237.20	$616,158.21	($161,078.99)	Oakland
TOPEKS01	12,388	4,619	$3,247,008.91	$3,087,163.50	($159,845.42)	Big Shunga Park North
TOPEKS02	13,796	6,226	$4,204,429.72	$4,245,569.67	$41,139.95	Arrowhead Place
TOPEKS04	6,960	2,599	$1,829,935.11	$1,739,310.26	($90,624.85)	Arbor Valley North
TOPEKS05	3,977	1,168	$951,971.15	$817,808.52	($134,162.63)	North Topeka West and Shunganunga Creek North
TOPEKS06	5,426	2,146	$1,535,593.47	$1,449,593.99	($85,999.48)	Cox

Outside Topeka

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	22,080	8,074	$10,879,324.61	$5,761,313.03	($5,118,011.58)	
ABWBKSCQ	6,086	1,911	$2,080,601.22	$1,369,864.09	($710,737.13)	Auburn-Washburn
CTSWKSCQ	1,166	488	$919,825.88	$349,349.95	($570,475.93)	No. Central Shawnee
KWVLKSCQ	644	272	$782,880.96	$185,802.67	($597,078.29)	Kaw Valley
RSVLKSCQ	521	155	$151,296.75	$105,533.03	($45,763.72)	Rossville
SMNTKSCQ	1,129	508	$734,164.74	$363,588.82	($370,575.92)	Seaman North
SMSTKSCQ	5,115	1,841	$1,849,740.28	$1,312,226.19	($537,514.09)	Seaman South
STSWKSCQ	1,487	679	$1,214,666.24	$488,847.36	($725,818.88)	Southeast Shawnee
SVLKKSCQ	680	215	$171,790.42	$146,508.30	($25,282.12)	Silver Lake
SWHTKSCQ	3,730	1,231	$1,470,699.21	$883,166.19	($587,533.02)	Shawnee Heights
SWSWKSCQ	1,522	775	$1,503,658.91	$556,426.44	($947,232.47)	Southwest Shawnee

4.1.4.5 Key Model Outputs

In this scenario, the most significant outputs to inform future decision-making are the initial capital costs, and the free cash flow.

This scenario is like the scenario produced in the 2014 study for the City of Topeka. With Tilson's updated cost factors included, the estimated cost of the network is somewhat higher, approximately $75 million vs. $62 million in the prior study. It also provides an estimate of the initial capital cost for areas of the County outside of Topeka, $53 million. This represents the up-front capital a network owner would need to raise to build the network.

The free cash flow over time is a basic metric of whether the project could become self-supporting. Outside Topeka, the GBCM suggests that under this scenario the network would not be financially self-supporting. Within Topeka, the pattern of cash flow suggest that the network could eventually become self-supporting on a year-to-year basis, but that the heavy cash outlays in the early years of the network operations swamp the later positive cash flow. This suggests that the network operator under this scenario would require some sort of initial financial assistance (for example, a grant), to have an attractive business case.

Public Network, with Option for a Private Operator (Retail WithStructure)

4.1.5 Description

In this scenario, the local jurisdiction(s) finance, build and own the FTTP network. The resulting network may be operated directly by the local jurisdiction. More commonly, however, for entities without an existing utility operation (like a municipal electric utility), the jurisdiction may contract with a private ISP to operate the network and provide retail services. For the purposes of discussing operating costs, risks and control, we will assume the latter.

Operating Costs

Partnering with a private firm as the network operator typically involves shifting all or some of the operating costs on to the private partner (along with some corresponding amount of the revenue derived from the operations). The amount of cost sharing would be determined in negotiations.

Risks

Once the contract is in place between the municipality and the network operator, the private entity accepts most of the risk in running the business in exchange for increased control. A municipality can mitigate their risk of a partner's non-performance by structuring the contract so that frequent renegotiations take place. It can also make payment under the contract partly contingent on the network operator's successes or failures of as measured by established metrics. Although working with a private operator can shield the City from a degree of risk that operating costs will be greater than expected or revenues lower, it does not take these risks completely out of the equation.

Control

Risk and control are highly correlated in this type of partnership. A public entity that relinquishes control and transfers risk generally stands to benefit from the network operator's business acumen. Network provisioning, maintenance, customer support, and billing are key activities that a typical public entity does not have either experience in or reputation for. Relinquishing control to the private entity allows for the opportunity to earn and sustain revenues.

4.1.6 Key Assumptions/Inputs

While for modeling purposes, many of the assumptions are the same as in the Retail NoStructure scenario, a key difference is that this scenario uses cost of debt and borrowing terms that are more typical for public infrastructure investments with a long life. Specifically, this scenario assumes the project would be fully financed by a bond issue at an interest rate of 4% for 20 years.

Service prices are also identical to the Retail NoStructure scenario.

Table 9 — Retail Operator on Public Network Fee Structure

Service	Residential		Business	
	Monthly Charge	Installation Fee	Monthly Charge	Installation Fee
Higher-Speed Data (1 Gbps)	$70	$300	$100	$300
Lower-Speed Data (10 Mbps)	$0	$300	Not Available	Not Available
Telephone (per line)	$20	N/A	$20	N/A

4.1.7 GBCM Output Summary

4.1.7.1 Total Capital Expenditure

The Gigabit Cities Model tracks three types of capital expenditure: up-front, success-based, and replacement. Up-front capital is the funding required to initially construct the project. Success-based capital is dependent on how many users sign up for service. An example of a success-based capital cost would be electronics at subscriber premises. Lastly, replacement capital is required periodically over the life of the network to replace or repair broken or outdated equipment and infrastructure.

The total initial investment, including up-front and success-based capital, is shown in the table below.

Table 10 — Capital Expenditure - Retail WithStructure Scenario

	Topeka	Outside Topeka	Total
Base Capital Cost	$52,110,499	$42,207,954	$94,318,453
Success-Based Capital	$24,874,351	$11,261,052	$36,135,403
Total Initial Investment	$76,984,850	$53,469,006	$130,453,856

4.1.7.2 Subscriber Statistics

The below two tables show key statistics modeled for the Topeka network and the greater Shawnee County network. Total Locations is the sum of housing units and businesses in each study area. Total Subscribers is the sum of Residential and Business subscribers after the take rate ramp-up is complete. The Assumed Take Rate is a levelized average over the project's first ten years, based on the income-based broadband subscription rates previously described for each neighborhood in the study area. The Total Subscribers number divided by the Total Locations is an alternative way to calculate take rate, which reflects the final and highest take rate modeled.

Within Topeka

Total Locations:	70,246.00	Housing Units:	59,670.00	Business Locations:	10,576.00
Assumed Take Rate:	39.4%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			
Total Subscribers:	24,797.30	Residential:	20,211.50	Business/Orgs:	4,585.80

Outside Topeka

Total Locations:	22,653.00	Housing Units:	20,108.00	Business Locations:	2,545.00
Assumed Take Rate:	37.3%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			
Total Subscribers:	8,074.42	Residential:	7,175.92	Business/Orgs:	898.51

4.1.7.3 Business Case Summary

Within Topeka

Total Annual Costs:	$14,814,696.98	Annual Capital Costs:	$5,863,010.09	Annual Operational Costs:	$8,951,686.88
Annual Revenue:	$16,834,456.89	Annual Contribution Margin:		$2,019,759.91	
Net Present Value of 30 Year Cash Flows			$9,544,691		

Per Active Subscriber Statistics	Capital Per ACTIVE line	$3,992.29
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	$38.75
	Total Monthly Revenue Run Rate per ACTIVE line	$72.75
	Total Monthly Cost per ACTIVE Line Run Rate	$64.02
	Monthly Capital Costs per ACTIVE line	$25.34
	Monthly Operating Expenses Per ACTIVE line	$38.68
	Levelized Monthly Contribution per ACTIVE line Run Rate	$8.73

Breaking into the first ten years of cash flows shows the following:

Year	1	2	3	4	5	6	7	8	9	10
Net Income	(11,073,465)	(11,468,714)	(7,159,560)	(4,391,113)	(2,823,973)	(287,557)	2,238,378	3,061,499	3,269,207	3,414,508
Free Cash Flow	(5,172,873)	(9,420,416)	100,425	(1,017,784)	(687,318)	(308,597)	(340,374)	1,650,847	1,618,680	1,277,556

The Topeka project begins to show an accounting profit after the sixth year, and can support its ongoing operations after year 7.

Outside Topeka

Total Annual Costs:	$8,466,560.72	Annual Capital Costs:	$3,861,493.54	Annual Operational Costs:	$4,605,067.18
Annual Revenue:	$5,967,002.31	Annual Contribution Margin:		($2,499,558.41)	
Net Present Value of 30 Year Cash Flows			($79,320,537)		

Per Active Subscriber Statistics	Capital Per ACTIVE line	$8,155.62
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	$33.89
	Total Monthly Revenue Run Rate per ACTIVE line	$75.85
	Total Monthly Cost per ACTIVE Line Run Rate	$107.62
	Monthly Capital Costs per ACTIVE line	$49.08
	Monthly Operating Expenses Per ACTIVE line	$58.53
	Levelized Monthly Contribution per ACTIVE line Run Rate	($31.77)

Breaking into the first ten years of cash flows shows the following:

Year	1	2	3	4	5	6	7	8	9	10
Net Income	(9,738,985)	(12,041,285)	(9,279,770)	(7,372,782)	(6,648,856)	(5,011,407)	(3,561,120)	(3,304,099)	(3,164,398)	(3,167,912)
Free Cash Flow	(4,959,681)	(7,311,131)	(3,564,051)	(5,149,054)	(5,380,375)	(5,043,956)	(4,497,414)	(4,658,449)	(4,842,098)	(5,041,430)

Unlike the Topeka city project, the project in the remainder of Shawnee County will require a permanent operating subsidy. Even combined with the relatively more attractive Topeka project, it will still require a subsidy.

4.1.7.4 Network Area Summary

The Network Area Summary shows the results for each neighborhood or study area modeled. It is intended to provide a better understanding of which areas tend to push the business case to a more positive one, and which ones require more support. Areas can have a negative contribution margin but a positive net present value because the net present value calculation in this table assumes that all the

network's assets will be sold after 30 years. In evaluating the individual areas, it is more conservative and reflective of real-world operating considerations to focus on the annual contribution margin.

Within Topeka

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	64,607	24,797	$14,814,696.98	$16,834,456.89	$2,019,759.91	
ADAMKS01	4,603	1,312	$942,628.84	$787,246.63	($155,382.20)	Adams Heights
COACKS01	4,370	1,789	$1,026,232.30	$1,261,844.25	$235,611.95	Coachlight Village s South
HIGHKS01	6,363	2,303	$1,388,252.09	$1,368,687.12	($19,564.97)	Highland Park
NORTKS01	3,873	1,545	$975,615.81	$993,885.16	$18,269.35	North Topeka
OAKLKS01	2,851	1,090	$642,268.59	$640,775.08	($1,493.50)	Oakland
TOPEKS01	12,388	4,619	$2,716,852.56	$3,210,512.46	$493,659.89	Big Shunga Park North
TOPEKS02	13,796	6,226	$3,539,469.80	$4,404,259.66	$864,789.85	Arrowhead Place
TOPEKS04	6,960	2,599	$1,519,475.22	$1,808,805.48	$289,330.27	Arbor Valley North
TOPEKS05	3,977	1,168	$784,221.71	$850,925.86	$66,704.15	North Topeka West and Shunganunga Creek North
TOPEKS06	5,426	2,146	$1,279,680.05	$1,507,515.18	$227,835.13	Cox

Outside Topeka

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	22,080	8,074	$8,466,560.72	$5,967,002.31	($2,499,558.41)	
ABWBKSCQ	6,086	1,911	$1,646,367.37	$1,418,610.36	($227,757.01)	Auburn-Washburn
CTSWKSCQ	1,166	488	$701,521.70	$361,776.45	($339,745.24)	No. Central Shawnee
KWVLKSCQ	644	272	$584,227.47	$192,747.58	($391,479.89)	Kaw Valley
RSVLKSCQ	521	155	$121,871.21	$109,476.02	($12,395.19)	Rossville
SMNTKSCQ	1,129	508	$567,992.41	$376,506.64	($191,485.77)	Seaman North
SMSTKSCQ	5,115	1,841	$1,475,201.92	$1,358,759.96	($116,441.96)	Seaman South
STSWKSCQ	1,487	679	$927,692.79	$506,288.59	($421,404.21)	Southeast Shawnee
SVLKKSCQ	680	215	$140,146.62	$151,986.11	$11,839.49	Silver Lake
SWHTKSCQ	3,730	1,231	$1,158,865.24	$914,609.10	($244,256.14)	Shawnee Heights
SWSWKSCQ	1,522	775	$1,142,673.99	$576,241.52	($566,432.48)	Southwest Shawnee

4.1.7.5 Key Model Outputs

In this scenario, the most significant outputs to inform future decision-making are the initial capital costs, and the free cash flow.

The initial capital costs in this scenario are like those of the Retail NoStructure, the estimated cost of the network is somewhat higher, approximately $77 million for the City of Topeka and for areas of the County outside of Topeka, $53 million. This represents the up-front capital a network owner would need to raise to build the network.

The free cash flow over time is a basic metric of whether the project could become self-supporting. Outside Topeka, the GBCM suggests that under this scenario the network would not be financially self-supporting. Within Topeka, the pattern of cash flow suggest that the network would eventually become self-supporting on a year-to-year basis, and eventually overcome initial deficits in the early years of the network operations with later positive cash flow to have a positive Net Present Value of cash flows over a 30 year project period.

Open Access Lit Service Provider (OpenAccess)

4.1.8 Description

In an open access model, the network owner provides nondiscriminatory, transparent pricing for service providers to access the network, with an ultimate goal of market competition. In a pure open access model, the network owner does not compete with retail providers on the network for end user customers. However, some open access models can involve a network operator that offers both retail service and wholesale access to the network. In this scenario, we have assumed that all properties receive a low-speed service from a default provider/network operator, but may upgrade to higher-speed services from one of a number of retail providers.

In this scenario, the local jurisdiction would provide lit wholesale transport services to any ISP that wished to provide retail services on the network. The "lit" nature means that the network owner controls both the physical fiber carrying the traffic, as well as the network electronics generating the optical signals carried by the fiber. Retail providers interface with the local access network, and have their traffic routed to the customers that they serve. As in the Retail WithStructure model this scenario assumes the network owner is a public local jurisdiction. The local jurisdiction can operate the network directly, but more commonly in cases without an existing municipal utility, will hire a private network operator to manage the wholesale services.

Operating Costs

Under this model, the County can have direct exposure to network operating costs. This includes both lit and dark services. On the lit side, operating costs include network electronics, bandwidth and transport services, and network operations and monitoring. Dark costs include maintenance and repair of physical cables, and administrative requirements for management and billing.

Risks

This type of operating model will provide the County with enhanced public control over the network, but a commensurate increase in risk exposure. The main risk would be a dearth of retail providers agreeing to provide services over the network. A way to mitigate this risk would be to find at least one "anchor ISP" that agrees to participate on the network prior to the network becoming generally available. There is also a risk that ISPs on the network may not perform as desired. This can be mitigated via contractual terms and market competition. If there are enough providers active on the network, then underperformers will likely fall to normal competition.

Open access networks have retail ISPs as customers, who in turn have end users as retail customers. Commonly this means that in an open access there are two levels of customer acquisition that must be successful. Retail providers will only be in a position to pay the network operator if they are in turn successful in signing up customers.

This version of an open access scenario assumes, however, that the entire community will share in the network construction and operation costs. In other words, not only the subscriber base will pay for the network. We have modeled it in the form of a non-bypassable fee directly charged to every premise passed, where every premise also gets a lower-speed service included for that fee. This should give a sense of the magnitude of expense. Furthermore, the model assumes that retail providers who succeed in signing up customers to higher level services then share revenue with the network operator. It is

important to note that this revenue model does not depend on a non-bypassable fee itself, just that there is a broad-based funding mechanism to raise a comparable amount of revenue.

Control

Since the County is providing lit services and owns the network, it has a high level of control. Standard contractual agreements would enable the County to remove ISPs. (Although, to provide ISPs predictability, removal is generally limited to defined good-cause reasons.) In the case of any anchor ISP, the agreement with that ISP should include clear scenarios and reasons where the County could remove the ISP or where the ISP could leave of its own volition. In either case, an important consideration would be to clarify what would happen to the ISP's customers and any equipment it installs to provide services.

4.1.9 Key Assumptions/Inputs

In this approach, we model that every residence and business in the served area will automatically receive access to the "low-speed" service offering,[4] with an option to voluntarily subscribe to higher-speed broadband service offered by multiple ISPs. ISPs who sell enhanced services on the network will pay a revenue sharing fee to the City/County, and those ISPs would compete on factors which include prices and speeds of service offered. The capital and base operating costs under this scenario would not depend on voluntary subscriptions or the revenue share, but instead be supported broadly by the whole community. There is a variety of broad-based revenue sources which a community might use, but to establish the size of the revenue required relative to the number of users, the scenario assumes the City or County will collect a monthly fee from every premise within the served area, a "per-parcel" fee. This is simply one way to model the necessary revenue and give an understanding of the magnitude of funds required for this operating mode. Any other funding mechanism that would raise a comparable amount of money would also serve.

The numbers in the below table are not what the end user would pay to an ISP who provided them service, except in the case of the base "low bandwidth" option where the per-parcel fee includes the cost of providing internet bandwidth to the end user. In the case of the high-speed option, the actual price paid by end users would consist of the per-parcel fee, the high speed revenue share, and an additional fee that the ISP would levy to cover its additional costs and profit margin. This last fee depends on the ISP and how it decides to structure its fees. This is something that JEDO would be able to arrive at via the RFP process for selecting ISPs.

Table 11 — Open Access Fee Structure

Monthly Fee Type	Within Topeka	Outside Topeka
Per-Parcel Fee (includes 10/10 Mbps service)	$36.50	$57.93
High Speed Revenue Share (per line)	$15.00	$15.00

The below table sums up the various fees and shows the total fee end users would pay based on different hypothetical ISP cost recovery fees, centered on Tilson's educated assumption of $25 per line for this fee.

[4] We expect that the exact speed of the offering would be set in relationship to the internet speeds commonly available at the time of deployment. It could be the equivalent of a 10 Mbps/ 10 Mbps service in today's market.

Table 12 — Potential End-User Prices for High Speed Service With Different ISP Fees

ISP Cost Recovery Fee	Total End User Price Within Topeka	Total End User Price Outside Topeka
$15	$66.50	$87.93
$20	$71.50	$92.93
$25	$76.50	$97.93
$30	$81.50	$102.93
$35	$86.50	$107.93

Since every premise automatically subscribes to service, in one sense the take rate is 100%. A more meaningful figure, however, would be the modeled take rate for enhanced, high-speed services. Since the network is publicly owned, we use financing assumptions commensurate with financing through public debt: a 4% bond issue for a 20-year term.

Lastly, it is important to note that open access model does not include in any figures for internet bandwidth. In this business model, it is the responsibility of each ISP to procure the bandwidth it needs to serve its customers. The JEDO-organized network only provides the connectivity from the ISP's designated interconnection point with its bandwidth provider to the ISP's customers.

4.1.10 GBCM Output Summary

4.1.10.1 Total Capital Expenditure

The Gigabit Cities Model tracks three types of capital expenditure: up-front, success-based, and replacement. Up-front capital is the funding required to initially construct the project. Success-based capital is dependent on how many users sign up for service. An example of a success-based capital cost would be electronics at subscriber premises. Lastly, replacement capital is required periodically over the life of the network to replace or repair broken or outdated equipment and infrastructure.

The total initial investment, including up-front and success-based capital, is shown in the table below.

Table 13 — Capital Expenditure – Open Access Scenario

	Topeka	Outside Topeka	Total
Base Capital Cost	$ 64,762,123	$45,992,827	$110,754,950
Success-Based Capital	$ 67,354,774	$31,333,707	$98,688,481
Total Initial Investment	$132,116,897	$77,326,534	$209,443,431

4.1.10.2 Subscriber Statistics

The below two tables show key statistics modeled for the Topeka network and the greater Shawnee County network. Total Locations is the sum of housing units and businesses in each study area. Total Subscribers is the sum of Residential and Business subscribers after the take rate ramp-up is complete. The Assumed Take Rate is a levelized average over the project's first ten years, based on the income-based broadband subscription rates previously described for each neighborhood in the study area. The Total Subscribers number divided by the Total Locations is an alternative way to calculate take rate, which reflects the final and highest take rate modeled.

Within Topeka

Total Locations:	70,246.00	Housing Units:	59,670.00	Business Locations:	10,576.00
Assumed Take Rate:	100.0%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			
Total Subscribers:	62,988.00	Residential:	54,007.00	Business/Orgs:	8,981.00

Outside Topeka

Total Locations:	22,653.00	Housing Units:	20,108.00	Business Locations:	2,545.00
Assumed Take Rate:	100.0%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			
Total Subscribers:	21,619.00	Residential:	19,208.00	Business/Orgs:	2,411.00

4.1.10.3 Business Case Summary

Below are three tables for each model: within Topeka and Shawnee County outside City limits. The first table shows key financial performance metrics of the network.

- Annual contribution margin is the difference between annual costs and annual revenue. Contribution margin is the net cash flow of the network. A negative value shows the average annual subsidy required to sustain the network, while a positive one shows the average amount of free cash generated.
- Net present value of the project's 30-year cash flows is a quick way to gauge the attractiveness of the modeled network as an investment and compare it to others.

The second table shows statistics per active subscriber. The first two rows, Capital per Active Line and Net Non-Recurring Cost per line, show one-time, nonrecurring costs incurred by the project divided by each active subscriber. The following rows show modeled revenue and cost per active line. Costs are further broken down into capital and operating expenses. The difference between the two, the Levelized Monthly Contribution, is the per-subscriber subsidy required (if negative) or cash generated (if positive).

Finally, the third table shows the first ten years of two key accounting metrics, net income and free cash flow. Net income is accounting profit, which includes depreciation and debt service, among others. Free cash flow is total cash generated and can be best thought of to show whether the project can sustain its own operations: negative free cash flow represents a subsidy required, while positive free cash flow represents cash generated. If a project has negative free cash flow and then positive, it would only need a subsidy for the first few years. This is also the case where the project may not be required to pay back its debt (such as if capital costs were paid for by a non-revenue bond, for example).

Within Topeka

Total Annual Costs:	$23,776,939.14	Annual Capital Costs:	$10,602,773.98	Annual Operational Costs:	$13,174,165.16
Annual Revenue:	$34,791,965.65	Annual Contribution Margin:		$11,015,026.51	
Net Present Value of 30 Year Cash Flows				$78,359,332	

Per Active Subscriber Statistics	Capital Per ACTIVE line	$1,237.63
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	($84.38)
	Total Monthly Revenue Run Rate per ACTIVE line	$148.21
	Total Monthly Cost per ACTIVE Line Run Rate	$18.56
	Monthly Capital Costs per ACTIVE line	$8.28
	Monthly Operating Expenses Per ACTIVE line	$10.28
	Levelized Monthly Contribution per ACTIVE line Run Rate	$129.65

Breaking into the first ten years of cash flows shows the following:

Year	1	2	3	4	5	6	7	8	9	10
Net Income	2,855,452	(10,165,121)	(11,362,793)	(4,051,587)	(884,187)	1,346,856	5,510,217	7,544,548	7,316,662	7,088,941
Free Cash Flow	10,188,617	9,822,521	9,964,538	3,761,336	3,315,498	2,888,486	2,489,609	2,051,568	1,622,492	1,039,637

Outside Topeka

Total Annual Costs:	$12,259,947.54	Annual Capital Costs:	$5,842,138.00	Annual Operational Costs:	$6,417,809.54
Annual Revenue:	$17,582,304.80	Annual Contribution Margin:		$5,322,357.27	
Net Present Value of 30 Year Cash Flows				$33,723,924	

Per Active Subscriber Statistics	Capital Per ACTIVE line	$1,958.91
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	($84.38)
	Total Monthly Revenue Run Rate per ACTIVE line	$37.12
	Total Monthly Cost per ACTIVE Line Run Rate	$25.88
	Monthly Capital Costs per ACTIVE line	$12.33
	Monthly Operating Expenses Per ACTIVE line	$13.55
	Levelized Monthly Contribution per ACTIVE line Run Rate	$11.24

Breaking into the first ten years of cash flows shows the following:

Year	1	2	3	4	5	6	7	8	9	10
Net Income	187,750	(7,185,778)	(6,727,249)	(2,707,990)	(1,180,342)	353,335	2,687,940	3,554,419	3,423,715	3,301,503
Free Cash Flow	5,395,624	5,178,927	5,152,775	1,521,614	1,264,811	1,013,189	707,423	389,208	135,702	(177,836)

The projects, either combined or separate, generate a consistent accounting profit after the fifth year but can almost immediately pay for their ongoing operations.

4.1.10.4 Network Area Summary

The Network Area Summary shows the results for each neighborhood or study area modeled. It is intended to provide a better understanding of which areas tend to push the business case to a more positive one, and which ones require more support. Areas can have a negative contribution margin but a positive net present value because the net present value calculation in this table assumes that all the network's assets will be sold after 30 years. In evaluating the individual areas, it is more conservative and reflective of real-world operating considerations to focus on the annual contribution margin.

Within Topeka

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	64,607	62,988	$23,776,939.14	$34,791,965.65	$11,015,026.51	
ADAMKS01	4,603	4,119	$1,646,839.04	$2,189,059.16	$542,220.12	Adams Heights
COACKS01	4,370	4,164	$1,613,322.18	$2,369,433.59	$756,111.41	Coachlight Village s South
HIGHKS01	6,363	5,934	$2,283,759.51	$3,239,862.19	$956,102.68	Highland Park
NORTKS01	3,873	3,604	$1,450,025.84	$1,977,093.57	$527,067.73	North Topeka
OAKLKS01	2,851	2,621	$1,029,990.32	$1,430,235.41	$400,245.09	Oakland
TOPEKS01	12,388	12,080	$4,462,336.09	$6,608,511.64	$2,146,175.55	Big Shunga Park North
TOPEKS02	13,796	14,868	$5,478,725.69	$8,460,311.87	$2,981,586.18	Arrowhead Place
TOPEKS04	6,960	6,588	$2,462,755.81	$3,604,462.98	$1,141,707.17	Arbor Valley North
TOPEKS05	3,977	3,523	$1,302,531.14	$1,908,337.38	$605,806.24	North Topeka West and Shunganunga Creek North
TOPEKS06	5,426	5,487	$2,046,653.51	$3,004,657.86	$958,004.35	Cox

Outside Topeka

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	22,080	21,619	$12,259,947.54	$17,582,304.80	$5,322,357.27	
ABWBKSCQ	6,086	5,887	$2,808,229.75	$4,791,234.86	$1,983,005.11	Auburn-Washburn
CTSWKSCQ	1,166	1,121	$868,872.67	$912,328.84	$43,456.16	No. Central Shawnee
KWVLKSCQ	644	603	$653,273.66	$486,226.23	($167,047.43)	Kaw Valley
RSVLKSCQ	521	494	$215,967.47	$398,334.59	$182,367.12	Rossville
SMNTKSCQ	1,129	1,098	$727,514.68	$893,706.69	$166,192.01	Seaman North
SMSTKSCQ	5,115	5,095	$2,433,585.05	$4,147,631.04	$1,714,045.99	Seaman South
STSWKSCQ	1,487	1,449	$1,122,527.68	$1,179,053.73	$56,526.05	Southeast Shawnee
SVLKKSCQ	680	667	$270,779.17	$537,832.33	$267,053.16	Silver Lake
SWHTKSCQ	3,730	3,754	$1,883,487.73	$3,055,112.28	$1,171,624.55	Shawnee Heights
SWSWKSCQ	1,522	1,451	$1,275,709.67	$1,180,844.22	($94,865.45)	Southwest Shawnee

4.1.10.5 Key Model Outputs

In this scenario, the most significant outputs to inform future decision-making are the initial capital costs, and the "per parcel fee."

The initial capital costs in this scenario are higher than those of the two Retail models because the model assumes that all premises in the City or County are connected, not just those that voluntarily sign up. The estimated cost of the network is approximately $132 million for the City of Topeka and, for areas of the County outside of Topeka, $77 million. This represents the up-front capital a network owner would need to raise to build the network. With the 100% build-out assumption this represents a high-water mark for capital costs estimates among all of the models.

Unlike the two Retail scenarios, the free cash flow in this scenario is somewhat less illuminating here because of differences in the way that the GBMC treats the different scenarios. In the Retail models, the network owner derives revenue from retail services, and the cost per user of these services is treated as fixed; therefore, the free cash flow "floats" in relation to this and the other assumptions. In the Open Access scenario, the network owner primarily derives revenue from a broad-based source *other* than subscribers, represented in the model by the "per parcel fee." The GBMC sets a constraint that free cash flow cannot be negative over the life of the project (although it may be in some individual years), and calculates the per parcel fee required to meet this constraint. [5] Therefore, the fact that this scenario achieves positive cash flow is no surprise as the model engineers it to do so. It is more illuminating in this scenario to note the monthly cost per parcel that the model has calculated to ensure that it does. Within the City, the model estimates that a $36.50/month fee would be required to provide every premise with a fiber optic connection and a limited-speed data connection. Assuming a hypothetical $25/month additional charge to sign up with an ISP for Gigabit service, and a $15/month revenue share back to the network owner, the resulting total cost to have service upgraded would be $76.50/month, similar to the Gigabit service rates assumed in the Retail models. In the County outside Topeka, the model has estimated that the per parcel fee required would be $57.93/month. The same $25/month

[5] The network owner also derives revenue from a revenue share from the ISPs for every premise taking a high-speed data service. The GBCM treats this revenue share as a supplemental source of income, and does not rely on it to cover the base costs of the network.

additional charge to sign up with an ISP for Gigabit service, and a $15/month revenue share would yield a total monthly cost of $97.93/month.

Dark Fiber

4.1.11 Description

Like the Open Access Lit model discussed above, the Dark Fiber option allows any ISP who is interested to participate in offering services on the network. It differs, however, in that the network owner in this scenario does not provide any lit services. Instead, the network owner merely leases fiber strands on the network to ISPs, who then locate their equipment in a facility provided by the network owner to provide their own lit services.

As in the Retail WithStructure and Open Access scenarios, this scenario assumes the network owner is a public local jurisdiction. The organizational requirements to operate a dark fiber network, however, are much simpler than those needed to provide lit services. While the network owner would still be responsible for maintenance and repair of physical cables, it would not need to monitor the network traffic flows (aside from being able to respond to breaks in the cable and dispatch repairs). Maintenance services could either be carried out by the network owner directly or by a contracted third party. Ongoing network management of dark fiber would consist of tracking which strands were leased and invoicing ISPs.

Operating Costs

Under this model, the network owner has limited exposure to network operating costs. These would be limited to the costs of operating a dark fiber network, including maintenance and repair of physical cables, and administrative requirements for management and billing. Dark network management costs and responsibilities are significantly simpler than managing a lit network.

Risks

Like a lit open access network, this type of operating model will provide the network owner with enhanced public control over the network, but a commensurate exposure to risk. As with the lit option, the main risk would be a dearth of retail providers agreeing to provide services over the network, while the network owner would be stuck with an unused network asset to maintain. A way to mitigate this risk would be to find at least one “anchor ISP” that agrees to participate on the network prior to the network becoming generally available. There is also a risk that ISPs on the network may not perform as desired. This can be mitigated via contractual terms and market competition. If there are enough providers active on the network, then underperformers will likely fall to normal competition.

Dark fiber networks can have different kinds of customers. The network owner would be looking primarily to enroll retail ISPs, who in turn have end users as retail customers. That means that, in an open access network, there are two levels of customer acquisition that must be successful. Retail providers will only be able to pay the network operator if they are in turn successful in signing up customers. Each connected premise will incur a base wholesale lease fee to lease the fiber strand(s) and provide service. Retail providers who succeed in signing up customers to higher level services then share revenue with the network operator.

In addition to retail ISPs, the network owner could lease fiber to virtually any entity in need of it. This could range from cellular or other local telecom providers who need backhaul, to institutions or companies that need to directly connect their facilities.

Control

Since the local jurisdiction owns the network, it has a moderate level of control. But, since it is at a further level of remove from end users than it would be in a retail or open access lit service provider role, its remedies and influence would be somewhat more limited. Standard contractual agreements would enable the network owner to remove ISPs. (Although, to provide ISPs predictability, removal is generally limited to defined good-cause reasons.) In the case of any anchor ISP, the agreement with that ISP should include clear scenarios and reasons where the network owner could remove the ISP or where the ISP could leave of its own volition. In either case, an important consideration would be to clarify what would happen to the ISP's customers and any equipment it installs to provide services.

4.1.12 Key Assumptions/Inputs

The Dark Fiber scenario envisions the local jurisdiction building a network and then leasing fiber strands to interested ISPs, who then provide service via their own electronics. ISPs would pay a per-connection lease fee, and then an additional portion of revenue if the connected premise subscribes to high-speed service.

Table 14 — Dark Fiber Fee Structure

Monthly Fee Type	Within Topeka	Outside Topeka
Per-Connection Lease Fee	$23.15	$46.54
High Speed Revenue Share (per line)	$5.00	$5.00

In this scenario, the model calculates the required per connection wholesale lease fee required for the network to cover its capital and operating costs, given the take rate assumptions. ISPs who choose to use the network pay the fees and then (if there is more than 1 active ISP), compete for customers on the services they offer. The model indicates that the required wholesale connection fee is about twice as high in the areas outside Topeka as it is within the City. This obviously has the potential to limit the attractiveness of the dark fiber connections to ISPs and/or require them to charge higher rates to their retail customers.

Lastly, it is important to note that the dark fiber model does not include any figures for internet bandwidth. In this business model, it is the responsibility of each ISP to procure the bandwidth it needs to serve its customers. The JEDO-organized network only provides a transport medium for the ISP's services to its customers. As with the Open Access model, every ISP will pass through the per-connection lease fee and high speed revenue share to customers. End customers will then pay the sum of these fees and a third fee used to recover ISP costs (e.g., bandwidth, customer service, network monitoring) and add a sufficient profit margin. The amount of that fee would be determined through the RFP process should JEDO choose to pursue this operating model.

Indicative all-in end user costs for high speed service with varying ISP recovery fees are in the table below, based on Tilson's educated assumption of $50 per line for this fee.

Table 15 — Potential End-User Prices for High Speed Service With Different ISP Fees

ISP Cost Recovery Fee	Total End User Price Within Topeka	Total End User Price Outside Topeka
$40	$68.15	$91.54
$45	$73.15	$96.54
$50	$78.15	$101.54
$55	$83.15	$106.54
$60	$88.15	$111.54

4.1.13 GBCM Output Summary

4.1.13.1 Total Capital Expenditure

The Gigabit Cities Model tracks three types of capital expenditure: up-front, success-based, and replacement. Up-front capital is the funding required to initially construct the project. Success-based capital is dependent on how many users sign up for service. An example of a success-based capital cost would be electronics at subscriber premises. Lastly, replacement capital is required periodically over the life of the network to replace or repair broken or outdated equipment and infrastructure.

The total initial investment, including up-front and success-based capital, is shown in the table below.

Table 16 — Capital Expenditure – Dark Fiber Scenario

	Topeka	Outside Topeka	Total
Base Capital Cost	$49,532,695	$41,013,754	$90,546,449
Success-Based Capital	$ -	$ -	$ -
Total Initial Investment	$49,532,695	$41,013,754	$90,546,449

4.1.13.2 Subscriber Statistics

The below two tables show key statistics modeled for the Topeka network and the greater Shawnee County network. Total Locations is the sum of housing units and businesses in each study area. Total Subscribers is the sum of Residential and Business subscribers after the take rate ramp-up is complete. The Assumed Take Rate is a levelized average over the project's first ten years, based on the income-based broadband subscription rates previously described for each neighborhood in the study area. The Total Subscribers number divided by the Total Locations is an alternative way to calculate take rate, which reflects the final and highest take rate modeled.

Within Topeka

Total Locations:	70,246.00	Housing Units:	59,670.00	Business Locations:	10,576.00
Assumed Take Rate:	47.8%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			
Total Subscribers:	30,122.75	Residential:	25,003.58	Business/Orgs:	5,119.17

Outside Topeka

Total Locations:	22,653.00	Housing Units:	20,108.00	Business Locations:	2,545.00
Assumed Take Rate:	56.2%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			
Total Subscribers:	12,149.08	Residential:	10,774.81	Business/Orgs:	1,374.27

4.1.13.3 Business Case Summary

Below are three tables for each model: within Topeka and Shawnee County outside City limits. The first table shows key financial performance metrics of the network.

- Annual contribution margin is the difference between annual costs and annual revenue. Contribution margin is the net cash flow of the network. A negative value shows the average annual subsidy required to sustain the network, while a positive one shows the average amount of free cash generated.
- Net present value of the project's 30-year cash flows is a quick way to gauge the attractiveness of the modeled network as an investment and compare it to others.

The second table shows statistics per active subscriber. The first two rows, Capital per Active Line and Net Non-Recurring Cost per line, show one-time, nonrecurring costs incurred by the project divided by each active subscriber. The following rows show modeled revenue and cost per active line. Costs are further broken down into capital and operating expenses. The difference between the two, the Levelized Monthly Contribution, is the per-subscriber subsidy required (if negative) or cash generated (if positive).

Finally, the third table shows the first ten years of two key accounting metrics, net income and free cash flow. Net income is accounting profit, which includes depreciation and debt service, among others. Free cash flow is total cash generated and can be best thought of to show whether the project can sustain its own operations: negative free cash flow represents a subsidy required, while positive free cash flow represents cash generated. If a project has negative free cash flow and then positive, it would only need a subsidy for the first few years. This is also the case where the project may not be required to pay back its debt (such as if capital costs were paid for by a non-revenue bond, for example).

Following are some basic details on the business case for the Dark Fiber option.

Within Topeka

Total Annual Costs:	$6,172,952.23	Annual Capital Costs:	$3,291,360.90	Annual Operational Costs:	$2,881,591.33
Annual Revenue:	$7,650,359.16	Annual Contribution Margin:		$1,477,406.93	
Net Present Value of 30 Year Cash Flows			$23,097,254		

Per Active Subscriber Statistics	Capital Per ACTIVE line	$1,165.68
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	($95.64)
	Total Monthly Revenue Run Rate per ACTIVE line	$15.00
	Total Monthly Cost per ACTIVE Line Run Rate	$12.11
	Monthly Capital Costs per ACTIVE line	$6.45
	Monthly Operating Expenses Per ACTIVE line	$5.65
	Levelized Monthly Contribution per ACTIVE line Run Rate	$2.90

Year	1	2	3	4	5	6	7	8	9	10
Net Income	(8,559,801)	(9,357,070)	(4,367,234)	(1,812,927)	(1,222,405)	758,817	2,725,293	3,002,739	2,971,330	2,918,161
Free Cash Flow	(2,951,100)	216,508	1,747,405	44,775	311,947	579,883	929,091	1,098,687	976,088	841,379

Outside Topeka

Total Annual Costs:	$4,997,651.89	Annual Capital Costs:	$2,757,892.46	Annual Operational Costs:	$2,239,759.43
Annual Revenue:	$6,066,946.53	Annual Contribution Margin:		$1,069,294.64	
Net Present Value of 30 Year Cash Flows			$10,414,217		

Per Active Subscriber Statistics	Capital Per ACTIVE line	$2,141.68
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	($92.92)
	Total Monthly Revenue Run Rate per ACTIVE line	$26.40
	Total Monthly Cost per ACTIVE Line Run Rate	$21.75
	Monthly Capital Costs per ACTIVE line	$12.00
	Monthly Operating Expenses Per ACTIVE line	$9.75
	Levelized Monthly Contribution per ACTIVE line Run Rate	$4.65

Breaking into the first ten years of cash flows shows the following:

Year	1	2	3	4	5	6	7	8	9	10
Net Income	(7,125,925)	(7,821,716)	(3,794,032)	(1,716,335)	(1,175,983)	509,418	1,879,096	1,839,234	1,787,349	1,743,324
Free Cash Flow	(2,481,843)	105,338	1,268,974	(178,132)	94,482	361,258	391,815	262,653	135,261	23,720

Therefore, the project (combined or separate) would generate an accounting profit after its fifth year but be able to support its ongoing operations after the first year.

4.1.13.4 Network Area Summary

The Network Area Summary shows the results for each neighborhood or study area modeled. It is intended to provide a better understanding of which areas tend to push the business case to a more positive one, and which ones require more support.

Within Topeka

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	64,607	30,123	$6,172,952.23	$7,650,359.16	$1,477,406.93	
ADAMKS01	4,603	1,514	$472,498.38	$360,393.63	($112,104.76)	Adams Heights
COACKS01	4,370	2,209	$425,029.96	$582,719.29	$157,689.34	Coachlight Village s South
HIGHKS01	6,363	2,752	$586,822.80	$685,872.05	$99,049.26	Highland Park
NORTKS01	3,873	1,715	$435,374.92	$431,081.05	($4,293.87)	North Topeka
OAKLKS01	2,851	1,212	$269,217.73	$301,727.06	$32,509.32	Oakland
TOPEKS01	12,388	5,663	$1,094,401.99	$1,416,447.93	$322,045.94	Big Shunga Park North
TOPEKS02	13,796	7,891	$1,363,382.59	$2,081,668.71	$718,286.12	Arrowhead Place
TOPEKS04	6,960	3,090	$635,098.14	$773,126.18	$138,028.03	Arbor Valley North
TOPEKS05	3,977	1,489	$362,615.63	$369,406.39	$6,790.75	North Topeka West and Shunganunga Creek North
TOPEKS06	5,426	2,586	$528,510.07	$647,916.87	$119,406.80	Cox

Outside Topeka

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	22,080	12,149	$4,997,651.89	$6,066,946.53	$1,069,294.64	
ABWBKSCQ	6,086	3,324	$890,839.23	$1,663,306.62	$772,467.40	Auburn-Washburn
CTSWKSCQ	1,166	633	$460,346.55	$316,719.22	($143,627.33)	No. Central Shawnee
KWVLKSCQ	644	321	$432,563.57	$156,245.88	($276,317.69)	Kaw Valley
RSVLKSCQ	521	263	$62,972.38	$128,069.51	$65,097.13	Rossville
SMNTKSCQ	1,129	620	$338,027.67	$310,262.52	($27,765.15)	Seaman North
SMSTKSCQ	5,115	2,876	$732,403.47	$1,439,957.45	$707,553.98	Seaman South
STSWKSCQ	1,487	818	$600,315.53	$409,295.72	($191,019.81)	Southeast Shawnee
SVLKKSCQ	680	354	$64,050.28	$172,569.76	$108,519.48	Silver Lake
SWHTKSCQ	3,730	2,120	$651,949.72	$1,060,588.93	$408,639.21	Shawnee Heights
SWSWKSCQ	1,522	819	$764,183.49	$409,930.91	($354,252.58)	Southwest Shawnee

4.1.13.5 Key Model Outputs

In this scenario, the most significant outputs to inform future decision-making are the initial capital costs, and the per connection lease fee.

The initial capital costs in this scenario are the lowest of all the FTTP models because the cost of network electronics is excluded from the scenario, which is limited to the costs of the dark fiber network owner. Additional capital costs would be borne by ISPs delivering service over the network, but these are excluded from the scenario in this model. The estimated initial capital costs under this scenario would be approximately $50 million within the City and $41 million in the County outside of Topeka.

As in the Open Access scenario and unlike the two Retail scenarios, the free cash flow in this scenario is somewhat less illuminating here because of differences in the way that the GBMC treats the different scenarios. In this scenario, like in the Open Access scenario, the GBMC sets a constraint that free cash flow cannot be negative over the life of the project (although it may be in some individual years). In this scenario there is no per parcel fee. The model calculates instead the per connection lease fee required to meet the constraint only from the revenues of that wholesale per connection lease fee. [6] The model does not assume that every premise is connected, only those premises that voluntarily subscribe to a retail ISP who uses the dark fiber network on a wholesale basis. Within the City, the model estimates that a $23.15/month connection lease fee would be required of the ISPs. Assuming ISPs rolled that wholesale cost, plus a $5/month revenue share back to the network owner, into their retail price and required a hypothetical $50/month additional revenue to provide an ISP for Gigabit service, the resulting total cost to have service upgraded would be $78.15/month. In the County outside Topeka, the model has estimated that the per connection lease fee required would be $46.54/month. The same $50/month additional revenue and $5/month revenue share to provide Gigabit service, would yield a total monthly cost of $101.54/month. It is worth noting that these wholesale per connection lease fees only would produce a financially self-sustaining free cash flow if the ISPs using the network achieved the take rates assumed, which are higher than in the other scenarios.

[6] The network owner also derives revenue from a revenue share from the ISPs for every premise taking a high-speed data service. The GBCM treats this revenue share as a supplemental source of income, and does not rely on it to cover the base costs of the network.

5 Alternative: Wireless Network Option

In outlying parts of Shawnee County, the broadband problem and the opportunity is different than in Topeka and areas close to the City. In the inner part of the County, the broadband service is available that is comparable to the service available in much of America. In these areas, the question and opportunity is how to provide service that is better the norm, and that is within reach of the whole community. In outlying areas, many suffer from internet options that offer much lower speed or reliability than is available to most homes in America. One option to address these areas is to offer the same gigabit, fiber-based service we have studied for the inner parts of the County. However, fiber-to-the premise has the highest initial capital cost, and the density in the more rural areas provide fewer premises across which to spread this cost. If an all-County fiber to the premise network proves not to be feasible, we have prepared a scenario for a fixed wireless network in six outlying cost study areas with a lower capital cost that could provide true broadband internet speeds (although much lower than the FTTP option). Figure 3 shows the areas where we modeled a potential wireless network.[7]

High-Level Design and Key Assumptions

To estimate the cost of a Fixed Wireless alternative, Tilson created a high-level wireless network design covering the six study areas. This design was shaped by several key objectives and constraints, including:

- Broad coverage. We placed adequate sites to provide an estimated 90% of premises in the study area with a predicted "good" or better signal strength.
- High capacity. We set an objective that the network should be able to deliver speeds at or better than the FCC's threshold for broadband service, 25 Mbps download and 3 Mbps upload. Because the equipment we modeled could provide symmetrical service, this became the ability to provide 25 Mbps download and upload. We limited the number of premises that would be addressed by a single node (base station) to limit contention for the wireless spectrum and fiber or microwave backhaul capacity available to each node.
- Readily available spectrum. We modeled only unlicensed spectrum for which there was no question that a wireless operator would have access. It also allowed the use of less expensive equipment, which made it more feasible to increase the number of nodes to provide better in-fill coverage or capacity.[8]
- Flexible, scalable design. We selected a design in which the exact locations of wireless nodes and/or the number of nodes can change easily without radically changing the cost of the design. This creates greater flexibility in later creating a detailed design and deployment.

[7] In determining the demarcation line between fiber only and combination fiber/wireless service, we used roughly the border of where cable TV service is available based on public filings (Form 477) required by the Federal Communications Commission. The FCC requires these Form 477 filings twice a year from all providers of internet services. In an Internet Service Provider's (ISP) Form 477 filing, they list each U.S. Census Block in which they provide service, as well as the maximum advertised download and upload speeds for both residential and commercial customers. The shortcoming with this approach is that Form 477 data will show a census block as being served by a given provider if only a single premise is actually served. In places where a road or other feature bisects a census block, Cox service may only be available on one side of the road. For the purposes of this design, we have modeled wireless service in these partial blocks. This decision, of course, can be and should be re-evaluated if and when JEDO decides to proceed with a wireless solution.

[8] For modeling purposes we assumed the use of Ubiquiti AirMAx Rocket AC R5AC-LITE nodes and Ubiquiti Air Fiber 5 AF5 wireless backhaul radios.

These parameters led us to a design with many small nodes delivering service to a local area of modest size, instead of a small number of high towers delivering signal over wide areas. We assumed that all nodes would be placed on new 80' wood utility poles at locations with existing utilities and available rights-of-way. This avoids the need to acquire rooftop rights or expensive tower leases.[9]

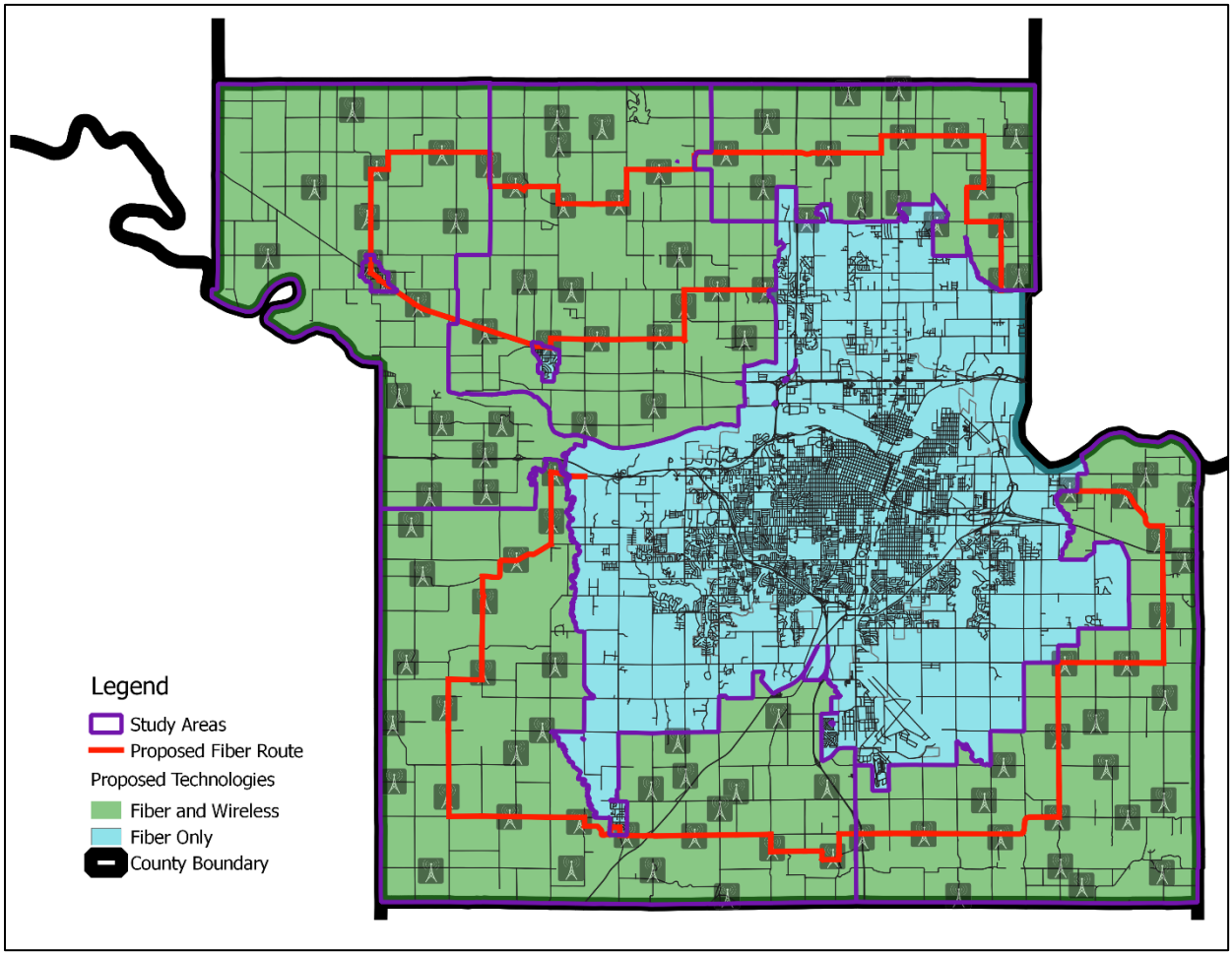


Figure 3 — Proposed Technologies

Approximate node locations are shown in Figure 3. Figure 4 shows how the parts of a wireless access network relate to each other. A core, fiber-connected layer connects both nodes that supports Point-to-MultiPoint (PtMP) connections to individual homes and businesses, as well as Point to Point (PtP) connections to other nodes off the fiber networks, which in turn relay service to additional premises via PtMP radio connections.

[9] A final detailed design might include a mixture of new poles and existing structures that are readily available on inexpensive terms. The ability to set new poles inexpensively, however, limits exposure to expensive or difficult-to-acquire leases.

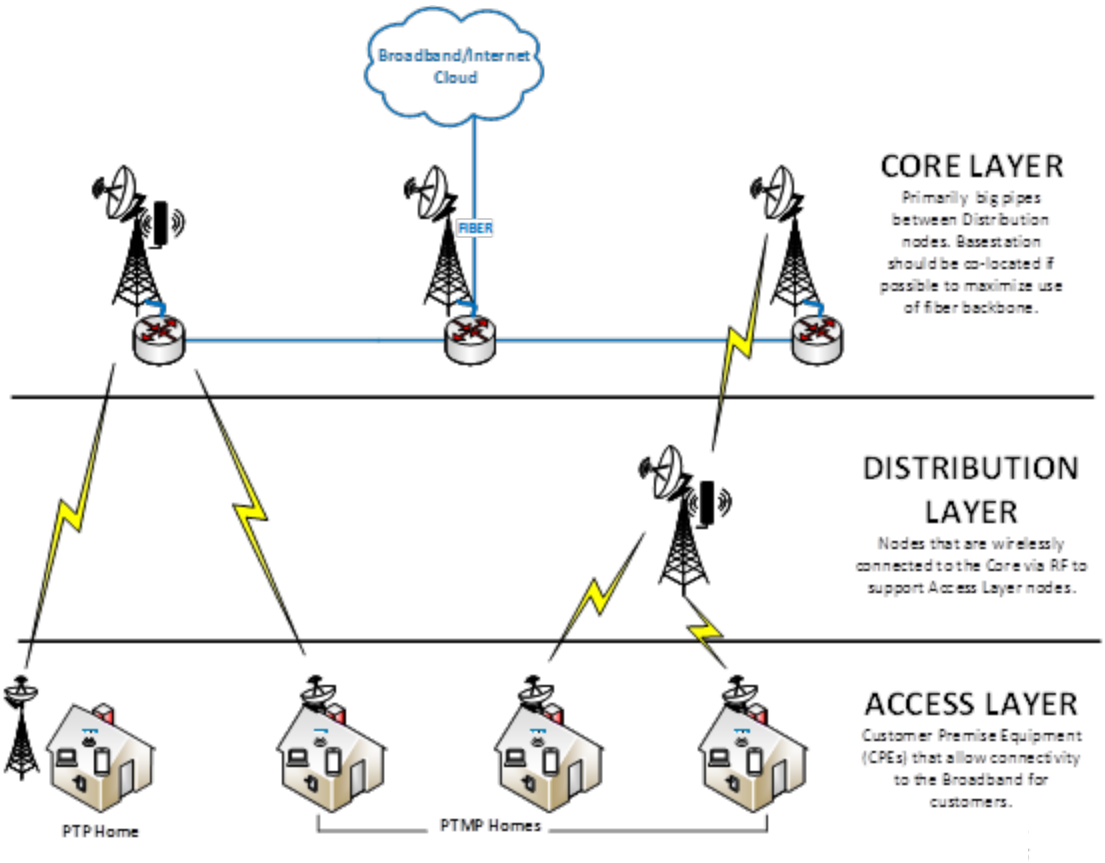


Figure 4 — Major Components of a Wireless Network

As is the case with most wireless networks delivering high-speed broadband service, our design assumed that nodes would be fed by a fiber network delivering high capacity "backhaul" broadband. To facilitate this, we modeled 97 miles of new fiber optic lines in two fiber loops through the six study areas, one north of the Kansas River and one south.

Providing backhaul connectivity to a wireless base station with wireless links can quickly become a bottleneck if not properly designed. Therefore, we attempted to place as many nodes as possible on the fiber route. We assumed that nearly half of the nodes in the design would be located on and directly fed by the fiber.[10] This fiber route for wireless backhaul will extend from the main fiber network in areas receiving fiber to the premises service. [11] The network in those areas will incorporate extra strands to provide backhaul for outlying wireless nodes.

[10] In addition, it could be possible to design this fiber route so as to make it able to directly serve homes and businesses along the route with fiber service, as an extension of the FTTP service in the "inner" study areas. However, for the sake of simplicity, we have not modeled that case here.

[11] For the purposes of this exercise, we assumed that fiber would be constructed throughout the "inner" study areas, and that the fiber in this design would interconnect with it at the study area boundary. We assumed that, while it might be desirable to located network electronics for the "outer" study areas at a central location within the "inner" study areas, the incremental fiber strands needed to connect such from a location to the boundary with the "outer" study areas could be provided as part of the design and construction of the FTTP network in the "inner" areas at a negligible incremental cost. Therefore the design only includes the fiber cable costs for the routes located in the

The remainder would be fed by Point-to-Point (PtP) wireless links between the fiber and a remote node. Most nodes that receive wireless backhaul (all of those shown in the map that are not on the red line) are only one wireless hop away from a node with a direct fiber backhaul. A minority of sites can only be reached with two "hops." Whether fed directly via fiber or via microwave, each node will have gigabit bandwidth available to it. This should be ample to provide a minimum service level of 25 Mbps symmetric service to each customer. Given the high available bandwidth and relatively low number of subscribers per tower, it may even be possible to provide greater than 25 Mbps per subscriber.

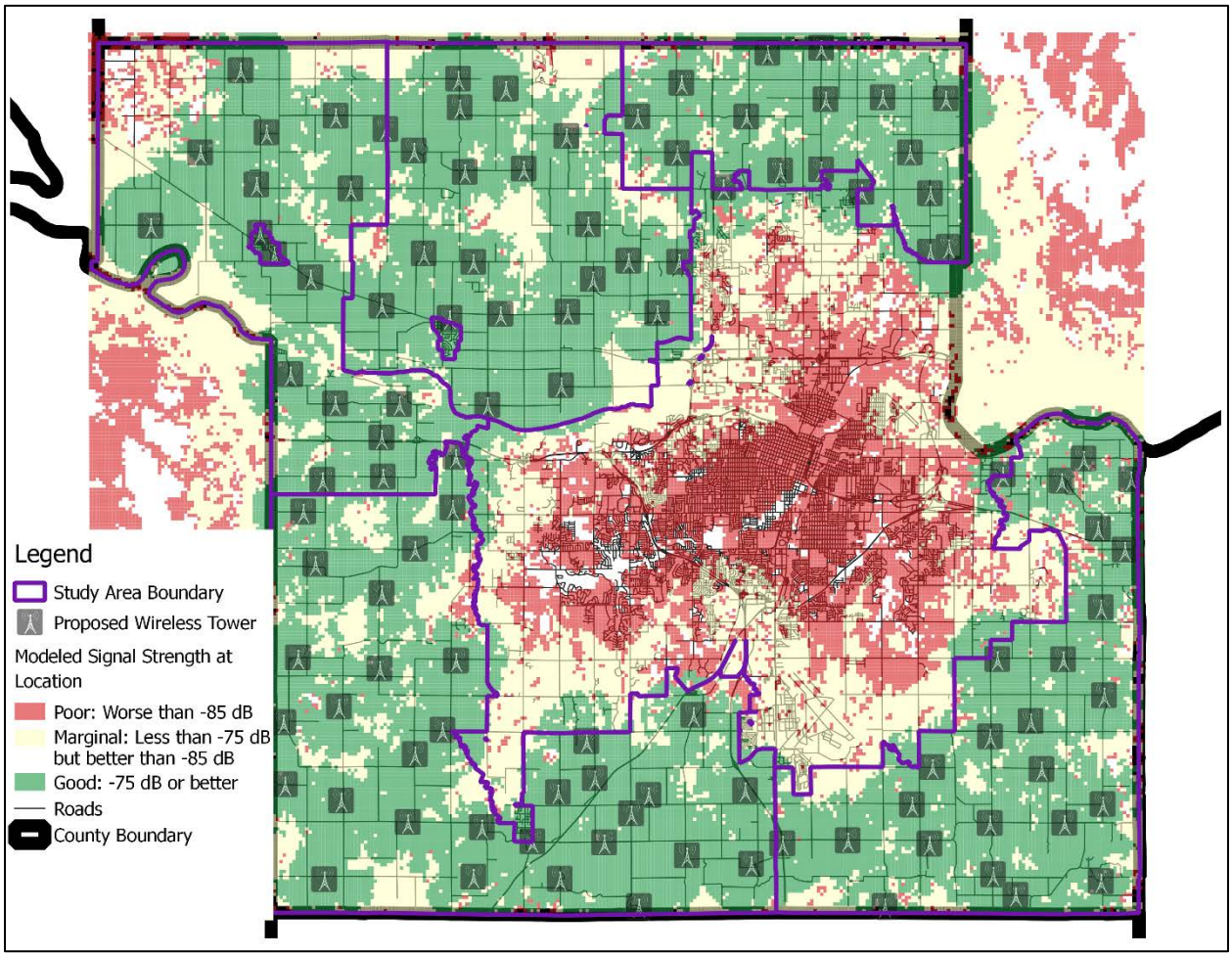


Figure 5 — Modeled Signal Strength

It is important to state that the node and fiber locations identified in a high-level design are not intended to be final and almost certainly would change in a final design that included field survey work. The objective in this high-level design is not to determine a set of optimal and final sites, but to approximate the type and aggregate number of sites required to achieve the objectives laid out above and provide the basis for a preliminary cost estimate. Furthermore, a network of small and inexpensive sites lends itself more readily to adjusting both the number and exact location of sites. This enables it to

"outer" study areas. The wireless design and cost estimate does include, however, a dedicated set of network electronics (Calix Active Ethernet) with dedicated capacity to each node and microwave backhaul link.

better respond to local siting constraints, as well as real-world coverage and capacity information gathered as the network is built and begins to add users.

Tilson used the industry standard software package, EDX Signal Pro, to model the received signal strength from the wireless network as laid out throughout the designated wireless service area. The modeling output is shown in Figure 5. Green shading indicates good signal strength of at least -75 decibels (dB), while red shows poor modeled signal strength of less than -85 dB. Yellow denotes marginal signal strength between -75 and -85 dB.

The modeled results reflect not only distance from each wireless transmitter, but also the effects of terrain and buildings on the received signal strength at a given location.

From the map in Figure 5, it may appear as though there are pockets where wireless service is not in the green. The map in Figure 6 shows modeled signal strength at each premise in Shawnee County that is to be served by wireless. The goal of this layout is to provide wireless coverage to as many premises as can be economically served. This is approximately 90% of premises.

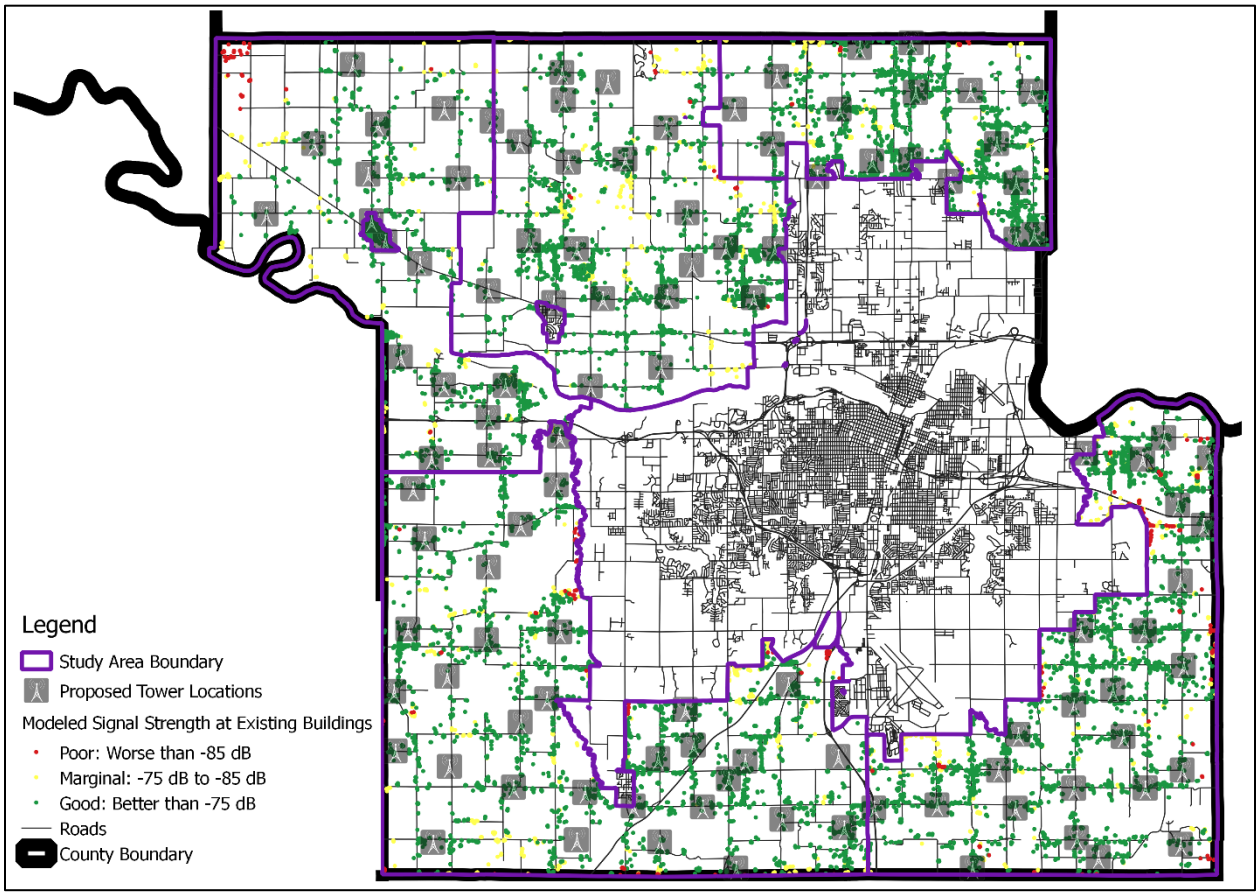


Figure 6 - Modeled Signal Strength at Individual Premises

GBCM Output Summary

5.1.1 Demand

The model assumes that every premise within wireless coverage area will use the default 25 Mbps service. No higher-speed service will be offered.

5.1.2 Total Capital Expenditure

The hybrid wireless-fiber network is estimated to cost $7,211,025 in up-front and success-based capital. Most of this cost is upfront cost (about 85%), consisting of fiber backhaul, microwave backhaul, and the radio access network (but not the radios at subscriber locations). The majority of the total project cost (about 65%) we estimate to be in the cost of the fiber backhaul network alone, about $4.68 million. We estimate that the radio access network and microwave backhaul would represent about another 20%, or $1.41 million. The remainder of the project cost would be in subscriber radios and their installation, cost which would be success-based, incurred only as customers were acquired.

5.1.3 Subscriber Statistics

The below two tables show key statistics modeled for the Topeka network and the greater Shawnee County network. Total Locations is the sum of housing units and businesses in each study area. Total Subscribers is the sum of Residential and Business subscribers after the take rate ramp-up is complete. The Assumed Take Rate is a levelized average over the project's first ten years, based on the income-based broadband subscription rates previously described for each neighborhood in the study area. The Total Subscribers number divided by the Total Locations is an alternative way to calculate take rate, which reflects the final and highest take rate modeled.

Total Locations:	6,526.00	Housing Units:	5,726.00	Business Locations:	800.00
Assumed Take Rate:	37.5%	Assumes a market-wide average take rate levelized over 10 years. Take rates vary across rate plans/services and locations types such as residential and businesses.			
Total Subscribers:	2,312.59	Residential:	2,042.22	Business/Orgs:	270.36

5.1.4 Business Case Summary

Below are three tables. The first table shows key financial performance metrics of the network.

- Annual contribution margin is the difference between annual costs and annual revenue. Contribution margin is the net cash flow of the network. A negative value shows the average annual subsidy required to sustain the network, while a positive one shows the average amount of free cash generated.
- Net present value of the project's 30-year cash flows is a quick way to gauge the attractiveness of the modeled network as an investment and compare it to others.

The second table shows statistics per active subscriber. The first two rows, Capital per Active Line and Net Non-Recurring Cost per line, show one-time, nonrecurring costs incurred by the project divided by each active subscriber. The following rows show modeled revenue and cost per active line. Costs are further broken down into capital and operating expenses. The difference between the two, the Levelized Monthly Contribution, is the per-subscriber subsidy required (if negative) or cash generated (if positive).

Finally, the third table shows the first ten years of two key accounting metrics, net income and free cash flow. Net income is accounting profit, which includes depreciation and debt service, among others. Free

cash flow is total cash generated and can be best thought of to show whether the project can sustain its own operations: negative free cash flow represents a subsidy required, while positive free cash flow represents cash generated. If a project has negative free cash flow and then positive, it would only need a subsidy for the first few years. This is also the case where the project may not be required to pay back its debt (such as if capital costs were paid for by a non-revenue bond, for example).

Total Annual Costs:	$1,085,056.48	Annual Capital Costs:	$620,456.57	Annual Operational Costs:	$464,599.91
Annual Revenue:	$944,979.21	Annual Contribution Margin:		($140,077.27)	
Net Present Value of 30 Year Cash Flows			($4,105,835)		

Per Active Subscriber Statistics	Capital Per ACTIVE line	$3,845.96
	Net Non-Recurring Cost ("Customer Turn Up") per Line TOTAL	$80.61
	Total Monthly Revenue Run Rate per ACTIVE line	$42.00
	Total Monthly Cost per ACTIVE Line Run Rate	$48.23
	Monthly Capital Costs per ACTIVE line	$27.58
	Monthly Operating Expenses Per ACTIVE line	$20.65
	Levelized Monthly Contribution per ACTIVE line Run Rate	($6.23)

The first ten years of cash flow and income are:

Year	1	2	3	4	5	6	7	8	9	10
Net Income	(1,123,114)	(1,366,232)	(908,739)	(622,008)	(523,893)	(283,005)	(80,710)	(62,013)	(54,098)	(56,853)
Free Cash Flow	(434,292)	(470,852)	(117,180)	(341,679)	(336,879)	(295,355)	(256,149)	(273,749)	(297,868)	(319,252)

5.1.5 Network Area Summary

The Network Area Summary shows the results for each neighborhood or study area modeled. It is intended to provide a better understanding of which areas tend to push the business case to a more positive one, and which ones require more support.

Region ("Fiber-hood") Summary	Total Locations Passed:	Estimated Subscribers:	Total Annual Costs:	Total Annual Revenue:	Annual Contribution Margin:	CDPServiceAreaName
All Regions	6,469	2,313	$1,085,056.48	$944,979.21	($140,077.27)	
ABWBKSCQ	0	0	$0.00	$0.00	$0.00	Auburn-Washburn
CTSWKSCQ	1,166	387	$192,500.24	$158,575.59	($33,924.65)	No. Central Shawnee
KWVLKSCQ	644	216	$123,685.20	$86,533.41	($37,151.79)	Kaw Valley
RSVLKSCQ	521	113	$29,607.96	$45,294.90	$15,686.94	Rossville
SMNTKSCQ	1,129	413	$171,873.60	$169,390.02	($2,483.58)	Seaman North
SMSTKSCQ	0	0	$0.00	$0.00	$0.00	Seaman South
STSWKSCQ	1,487	545	$244,314.88	$223,194.18	($21,120.70)	Southeast Shawnee
SVLKKSCQ	0	0	$0.00	$0.00	$0.00	Silver Lake
SWHTKSCQ	0	0	$0.00	$0.00	$0.00	Shawnee Heights
SWSWKSCQ	1,522	639	$323,074.60	$261,991.11	($61,083.49)	Southwest Shawnee

5.1.6 Key Model Outputs

In this scenario, the most significant outputs to inform future decision-making are the initial capital costs and the free cash flow.

This scenario has the lowest upfront capital costs of the scenarios studied for addressing unserved areas of Shawnee County, with an estimated initial capital cost of approximately $7.2 million. About 65% of this estimated cost is attributable to the capital cost to develop a fiber backhaul network to wireless nodes.

The free cash flow over time for this scenario is consistently negative over the first 20 years of the project, suggesting that the project could not be entirely self-funding. However, here it is also important to consider the magnitude of the deficit. The projected annual free cash flow deficit for this scenario is never above $400,000 after the first couple of years and it never exceeds the projected 20-year bond payment for this scenario of $542,000. In some years it is less than half that amount. In essence, with the benefit of some initial capital support that alleviated the need to pay the whole cost of the network, the scenario suggests that the project could afterwards support itself financially.

6 Camoin Associates Peer Review: 2014 KDOC Economic Impact Study

About Camoin Associates

Camoin Associates has provided economic development consulting services to municipalities, economic development agencies, and private enterprises since 1999. Through the services offered, Camoin Associates has had the opportunity to serve EDOs and local and state governments from Maine to California; corporations and organizations that include Lowes Home Improvement, FedEx, Volvo (Nova Bus) and the New York Islanders; as well as private developers proposing projects more than $600 million. Our reputation for detailed, place-specific, and accurate analysis has led to projects in 30 states and garnered attention from national media outlets including *Marketplace* (NPR), *Forbes* magazine, and *The Wall Street Journal*. Additionally, our marketing strategies have helped our clients gain both national and local media coverage for their projects to build public support and leverage additional funding. We are based in Saratoga Springs, NY, with regional offices in Portland, ME; Boston, MA; and Brattleboro, VT. To learn more about our experience and projects in all our service lines, please visit our website at www.camoinassociates.com. You can also find us on Twitter @camoinassociate and on Facebook.

Review of Methodology

The author lays out four future scenarios related to the "Broadband Take Rate by Download Speed", namely:

1. "Baseline" – which assumes only typical growth in broadband penetration and that there are no "proactive efforts to accelerate local broadband investment and usage." Figure 1 from page 39, copied below, shows the Baseline assumptions around take rates by bandwidth speed bracket for 2020.
2. "Low" – which assumes proactive local efforts and expanded investment.
3. "Moderate" – which assumes further proactive local efforts and expanded investment.
4. "High" – which assumes further proactive local efforts and expanded investment.

The Baseline Scenario for Shawnee County Assumes

1. The Shawnee County economy grows at approximately the same average rate as the NE Kansas projected annual growth rate for the next 10 years;
2. Broadband availability and use in Shawnee County over the next ten years will be typical of what is expected for NE Kansas without any proactive efforts to accelerate local broadband investment and usage.
3. Broadband Take Rate by Download Speed (assumed percentage of businesses accessing broadband at each speed tier) for the Baseline Scenario is as follows:

Broadband Take Rate by Bandwidth Speed Assumption by the Year 2020
(only download speeds are represented)

	3 to 10 Mbps	10 to 50 Mbps	> 50 Mbps	> 100 Mbps
Small Business	20%	50%	25%	0%
Large Business	0%	15%	60%	25%
Home-Based Business	30%	50%	20%	0%
Residents	40%	40%	10%	0%
Public Institutions	0%	20%	40%	35%

Figure 7 - Baseline Scenario Assumptions and Take Rates

Next, the author describes the then-current statistics for the County on employment, economic value, and labor income for each of the major industry sectors[12]. The author calculates the "Baseline Growth Factor" for each of those sectors, which is the product of:

- The percent of occupations within a given sector that rely on information technology, using occupational data from O_Net, and
- The projected ten-year growth rate for all jobs in that sector, using data from the Kansas Labor Information Center.

For example, the factor as calculated for the Manufacturing sector is 0.0748 for the Baseline scenario. This means that the author projects that, given the presumed take rates, as shown above in Figure 7, and the occupational composition of the Manufacturing sector, over ten years, employment in manufacturing businesses would increase by 7.48%, or 491 jobs, from the then-current level of 6,558 jobs. Using all the Baseline Growth Factors across all industries, the author projects that total employment in the Baseline scenario would rise by 8,835, from 118,108 to 126,943, or 7.48%, over ten years.[13]

To arrive at employment in the Low, Moderate and High scenarios, the author simply takes each of the Baseline Growth Factors for each industry and adds 5, 10, and 15 percentage points. So, rather than assuming the Baseline rate of 7.48% for manufacturing, the author projects 12.48%, 17.48%, and 22.48% growth in manufacturing for the Low, Moderate, and High scenarios.

The results for total employment change in each scenario are:

1. Baseline: 8,835 jobs
2. Low: 14,741 jobs
3. Moderate: 20,646 jobs
4. High: 26,551 jobs

Next, the author subtracts the Baseline change from each of the Low, Moderate, and High scenarios to arrive at the presumed impact of various levels of "proactive local efforts and expanded investment" in broadband, namely:

1. Low: 5,905 new direct jobs
2. Moderate: 11,811 new direct jobs
3. High: 17,716 new direct jobs

Finally, the author uses the IMPLAN economic impact model to take the direct job change, above, and calculate the indirect and induced jobs[14]. He then reports the final job change as the sum of the direct, indirect and induced job growth, namely:

1. Low: 9,803 total new jobs
2. Moderate: 19,606 total new jobs
3. High: 29,409 total new jobs

---

[12] While not explicitly stated, the major sectors the author references appear to be all 2-digit NAICS codes as defined by the US Census Bureau. See: https://www.census.gov/eos/www/naics/.

[13] The fact that the manufacturing growth rate and the total growth rate are both 7.48% is a coincidence.

[14] See "Attachment A: What is Economic Impact Analysis?" for an explanation of economic impact modeling and the terms used.

The author uses the same methodology to calculate total new economic value (i.e. output) and labor income.

Critique of Assumptions and Methodology

6.1.1 Preamble

Note that, in addition to our review the 2014 Impact Study and a brief literature review, we also contacted the author of the 2014 Impact Study, Bill Gillis, for clarification on certain points. His response is provided in Attachment B to this report, in Section 8.2, and is referred to hereafter as the "Author's Response."

6.1.2 Critique

The initial values used by the author of the 2014 Impact Study, with respect to employment, output, and income appear to be reasonable and match roughly with data we have for that period. Likewise, the methodology used to calculate the Baseline Growth Factors appears reasonable, i.e. using the State of Kansas Labor Information Center projections by industry category[15].

With respect to the various take rate assumptions used by the author, it was difficult to evaluate the reasonableness of those figures (see tables on page 39, 41-43 of the 2014 Impact Study) as no basis was provided in the original report. In fact, we noted one anomaly: the total tax rate for "Home-Based Businesses" was 100% in the "Baseline" scenario, but dropped to 95% in the "Low" impact scenario, even though all other categories either remained the same or increased and the tables generally show a large increase in overall bandwidth speed assumptions. In the Author's Response, the author refers to the Brookings Study[16] and states that the take rate increases are "loosely calibrated" to that study's findings.

Our principal concern with the 2014 Impact Study is that the Low, Moderate and High scenarios assume growth rates that are 5, 10, and 15 percentage points greater than the Baseline scenario. These growth figures drive the remainder of the analysis and are critical to the headline impact figures reported in the executive summary. In the Author's Response, he provided a quote from the Brookings Study referenced above,

> "We find that nonfarm private employment and employment in several industries is positively associated with broadband use. More specifically, for every one percentage point increase in ***broadband penetration*** in a state, employment is projected to increase by 0.2 to 0.3 percent per year."[17] [emphasis added]

However, this refers to increases in broadband penetration (i.e. providing broadband to consumers who would not otherwise have broadband access) whereas the 2014 Impact Study is predominately concerned with providing consumers access to higher-speed broadband (e.g. moving a customer from a 5 Mbps connection to a 100 Mbps connection). The economic bonus provided by increases in

[15] However, we do note that the 2014 Impact study used employment, output and labor income figures for the County, whereas the project in question at that time focused only on the City of Topeka.
[16] https://www.brookings.edu/wp-content/uploads/2016/06/06labor_crandall.pdf
[17] The Effects of Broadband Deployment on Output and Employment: A Cross-Sectional Analysis of U.S. Data. Robert Crandall, William Lehr and Robert Litan. Brookings Institute. 2007

broadband penetration has been noted in several studies[18,19] and could play a small role here, in that, presumably, some in the City/County may have had no broadband access in 2014 but would have access in the future. But, based on the figures provided by the author on the Baseline scenario, the 2014 Impact Study already assumes that 95% of small businesses, 100% of large businesses, 100% of home-based businesses, 90% of residents and 95% of public institutions already have broadband access. So, there appears to be little scope for meaningful increases in broadband penetration itself.

With respect to increases in broadband speeds, as distinct from increases in broadband penetration, there appears to be less conclusive research on the (presumed) resultant increase in economic growth[20]. The study most often cited on the subject noted that:

> "Doubling broadband speeds for an economy can add 0.3 percent to GDP growth"[21]

While not the business case underpinning the 2014 Impact Study, the introduction of gigabit services to certain localities has also provided some evidence of the effects of increases in broadband speed:

> "More specifically, our model suggests that for the MSAs with widely available gigabit services, the per capita GDP is approximately 1.1 percent higher than in MSAs with little to no availability of gigabit services."[22]

Please note that first figure mentioned of 0.3 percent is with respect to annual GDP growth, whereas the second figure of 1.1 percent refers not the annual growth rate but the overall per capita GDP figure for a given city, so it signals a one-time, non-reoccurring boost in GDP.

In the absence of more reliable studies, we believe that the best figure to use would be that of the Ericsson study of an increase of 0.3 percent in GDP growth for a doubling of overall broadband speeds. Therefore, if the City/County were able to double broadband speeds across the economy, over ten years, we would anticipate incremental GDP growth of just over 3%. A quadrupling of speeds would lead to approximately 6.4% of incremental GDP growth. However, there appears to be diminishing returns with further incremental increases in broadband speed[23].

---

[18] One such study, often cited, is from the World Bank, which found that a 10% increase in broadband penetration in a high-income country would correspond to a 1.21 percentage point increase in the economic growth rate. Qiang, Christine Zhen-Wei and Carlo M. Rossotto, IC4D: Extending Reach and Increasing Impact, Chapter 3: Economic Impacts of Broadband, GICT Dept., World Bank. (2009).

[19] "Our analysis indicates a positive relationship between broadband expansion and economic growth. This relationship is stronger in industries that rely more on information technology..." ("Does Broadband Boost Local Economic Development?" Jed Kolko. Public Policy Institute of California. Jan 2010).

[20] One issue on this research topic is the ever-evolving definition of "broadband" and what constitutes "high-speed broadband". Each of the studies mentioned above had their own definition of the minimum speeds that qualify as "broadband" or "high-speed broadband", while the FCC has updated its own definitions over the years.

[21] Ericsson, Arthur D. Little and Chalmers University of Technology. Socioeconomic Impacts of Broadband Speed. (2013).

[22] Sosa, David. "Early Evidence Suggests Gigabit Broadband Drives GDP." Analysis Group for FTTH Council.

[23] The Ericsson study also noted a likely effective of diminishing returns: "Therefore, the study suggests there are economic benefits both in upgrading from 9 to 42 Mbps, and from 42 to 90 Mbps. However, the gain is smaller when the original speed is higher. Hence, the Copenhagen Economics study implies that the marginal effect decreases as the speed increases. This also conforms to other studies, for example, Meek et al. (2010)."

In the 2014 Impact Study, the median take rate for residents falls into the 10-to-50-Mbps category for both the Baseline Scenario and the Low scenario, rises to More-Than-50-Mbps for the Moderate scenario and More-Than-100-Mbps in the High scenario. While we cannot determine exactly the percentage increase in broadband speeds, it appears to fall somewhere between a doubling and quadrupling of broadband speeds across the economy. Therefore, we believe that the 2014 Impact Study's assumptions on the boost to the County's economy of between 5-15% is probably somewhat overstated. Instead, we would have used assumptions of between 3% and 6.4% for this figure, absent either better research findings or a clearer understanding of the actual percentage increase in broadband speeds being proposed. The revised economic impact is equivalent to an incremental $732M to $1,562M in GDP.

The remainder of the methodology and assumptions used in the 2014 Impact Study appear to be reasonable and in-line with what we would have used in our own analysis (i.e. the economic multipliers used to derive indirect and induced impacts).

Considerations for Future Analyses

Should JEDO wish to undertake a new analysis of the economic impacts of broadband investments in the context of new network buildout plans, we would submit the following recommendations:

- More clearly define the existing broadband speeds enjoyed by your residents, including the number of residents effectively without broadband.
- More clearly define the projections of future broadband speeds attainted for those same residents, so that an analyst could understand the effective percentage change in broadband speeds for the "typical" City and County resident.
- Include some understanding of the timeframe of both deployment and adoption of the new network. For example, while the network may only take a couple of years to complete, what is a reasonable assumption for the adoption rate (i.e. the rate at which residents and businesses will subscribe to the increased broadband speeds)?
- Focus on the adoption rate by speed category in lieu of simply the availability of a speed tier.

7 Conclusion

Key Observations

Our analysis at this stage of the project indicates that there is a feasible path to improved broadband throughout the City of Topeka and Shawnee County. There are a greater number of potentially attractive options within the denser parts of the County, and narrower set for the more rural parts. The validated cost for a fiber network in this study is higher than forecasted in the 2014 study, but the business case for a fiber network in Topeka is still positive in the long run under the new forecast if we assume interest rates and an investment horizon consistent with a public-sector infrastructure investment. A fiber-wireless network option in rural unserved areas of Shawnee County could be built at a substantially lower initial cost than a full FTTP build-out. Although it could likely sustain its ongoing operations, such a network would likely require support for its initial capital costs. Our review of the 2014 economic impact statement indicates that the expected economic impact would likely be less than originally forecasted, but still positive.

All of the scenarios studied here assumed that reaching all locations in the study areas was a requirement. If reaching all locations is not a requirement, it would be possible to tailor new network investment to areas that have the demonstrated demand to make a project financially self-funding. The next section discusses some methods for validating demand assumptions.

However, it is a choice, not a requirement, that all investments be self funding. Obviously, the degree to which local jurisdictions can support investments that are not self-funding even if they want to is limited by budgetary constraints. To the extent capital support is available and needed, it can be strategically targeted to achieve whichever goals that policymakers rank as most important. This could in Topeka and Shawnee County include, for example:

- Coverage in unserved rural areas
- Investments that will jump-start additional private investments in better broadband service
- Extending infrastructure into less-advantaged, lower-income neighborhoods or high-need economic development targets

If universal access to any new or improved services—either FTTP or wireless—is essential, then results of this study suggest that within many local jurisdictions within the County, a project would need to be committed to supporting less-attractive areas through one or more of a variety of mechanisms, including bundling together less and more attractive neighborhoods or communities, partial subsidies of network investments, or an ongoing funding mechanism not tied to subscription revenue. A revenue model based entirely on voluntary subscriptions will likely be adopted at a lower rate by lower income households. As noted above, it also may be uneconomic to provide a solution in more rural areas based only on voluntary subscriptions. A network connecting all premises from the start will have a higher capital cost and this higher cost may require a commitment to cost sharing across a broader base to be financially sustainable. This kind of broad-based funding commitment is represented in our analysis by the "Open Access" model. A commitment to connecting every premise will require a higher level financial commitment from the local jurisdictions, the community, and potential service provider partners.

Recommended Methods to Validate Demand Assumptions

In developing any broadband solution, it is important to bear in mind that forecasting demand in a project's early stages is an estimate, not a perfect prediction. JEDO can make reasonable assumptions regarding demand, but they remain assumptions. It is therefore important to regularly test those assumptions.

The first step is to establish a methodology to determine what demand levels the project requires. The different models presented make different assumptions about how the costs of the network will be recovered. In the version of an Open Access operating model presented in this report, the issue of "necessary" take rate has been dealt with by the assumption of a non-bypassable fee paid by all premises passed and calculated to cover the capital cost of the network and its operation. However, to the extent that cost recovery relies on voluntary subscription charges (as in the other scenarios), then the need to achieve a necessary take rate becomes paramount. And at the end of the day, for any operating model that relies both on voluntary subscriptions and public funding or financing of the network, failure to achieve necessary take rates results in the costs of the network reverting in an unplanned manner to the general taxpayers or, depending on the financing structure, possibly in default. Validating demand is therefore very important prior to committing to a project when choosing a financial model that depends upon it.

With the above in mind, there are a few ways to validate demand. These provide varying levels of certainty at varying levels of cost.

- Survey. Conducting a survey is a common way of gauging demand for a potential new broadband network. The survey should be kept brief to encourage a higher response rate. Surveys can be targeted at diverse groups of potential subscribers and can ask different questions of different groups to identify patterns within different potential segments.

  The primary disadvantage to a survey in validating demand is that it is not binding. When it comes time for people to sign up for service, they may not do so even if they had indicated an interest on a survey. Surveys can also provide biased results if not carefully constructed and distributed. Distributing a survey online, for example, may result in a higher proportion of respondents indicating interest in broadband than in the general population, for the simple reason that people who are already online will be better acquainted with the benefits of broadband than people who lack it. Finally, it may be difficult to get a statistically significant number of respondents to a survey without offering incentive for completing the survey.

- Presubscription campaign. A presubscription campaign can mitigate much of the uncertainty related to a survey. In a presubscription campaign, people are asked to make a financial commitment to subscribing ahead of time, typically in the form of a deposit. In addition, a presubscription campaign can be geographically targeted so that Shawnee County is subdivided into different areas. Once enough people commit to service in each area, the network will be built. The deposit can be applied to their bill once service starts, or refunded if the network is not built.

The main drawback to a presubscription campaign is that presubscription take rates may be lower than what a new network may ultimately achieve. If only people who are committed enough to pay a deposit sign up, there may be many others who would like to subscribe when service is available but either cannot afford the deposit or cannot otherwise commit to a presubscription campaign. Care should therefore be taken to try to account for these additional likely subscribers.

- Presubscription Process Managers. Presubscription managers offer a "one stop shop" to verify demand, sign up subscribers, and accept payment. These service providers offer a variety of integrated marketing tools that help create marketing campaigns to identify and map areas where people are interested in subscribing to a potential network. They can support on-line surveys that serve as a jumping-off point for later asking potential customers to commit to a project. Campaigns can engage the community as part of the marketing and outreach; that is, people who pre-subscribe can also use the service to refer friends and neighbors. Presubscription managers can then accept payment of any deposits or fees and keep track of payments received or owed. Finally, they generally support multiple business cases for a proposed network and can even produce high-level cost estimates or network layouts.

Next Steps

The planning process established by JEDO for this project next calls for a Request-for-Information (RFI) to potential private partners. Conducting an RFI will begin the process of moving planning in this project from hypothetical scenarios toward a concrete set of options on which JEDO and/or local jurisdictions within the City of Topeka and Shawnee County can act or not act. There are three key decisions for JEDO going into an RFI:

1. Is the scale of the capital cost estimates for any of the proposed scenarios within the range of potential feasibility to finance for JEDO and/or the local taxing jurisdictions? If not, then whatever the merits of a larger or more robust network, we may want to seek comment in an RFI on a more incremental set of options. However, if bonds or other financing mechanisms in the range contained within the options discussed may be feasible, then we can seek provider comment on potential projects commensurate with the level of commitment that local jurisdictions may be prepared to make.
2. Is the approach to a project likely to be aggregated county-wide, or simply be approached as a series of one or more local, independent, projects? The analysis from this phase of the project indicates that projects outside the City, and especially fiber projects, will have a difficult time being economically self-supporting on a stand-alone basis relying only on voluntary subscriptions.
3. Will the objective of a project be to ensure that every location in the participating local jurisdiction(s) is connected to a new broadband service or will it be limited to providing a new, improved broadband choice to at least some residents and businesses? Ensuring new services reach every location will require a greater commitment.

It is not necessary that JEDO answer all of these questions before deciding to conduct an RFI, or even that any decisions be immutably made prior to issuing the RFI. These questions may be discussed and answered preliminarily as part of the development of the RFI, and then can guide the inquiry. For example, the answers to all the above, but especially #1 and #2, will determine the degree to which

comment on a wireless option for rural Shawnee County is a focus for the RFI, including whether it is presented as a primary option or a fallback alternative.

The RFI also represents an opportunity to seek out provider feedback and gauge interest in potential operating models, to the extent that they are not eliminated by answers to the questions above:

- Interest in building a network meeting JEDO's objectives with little to no public-sector involvement. While our analysis suggests that the business case for a new, purely private FTTP network may be thin, we have prepared a generic case. Circumstances from individual providers may vary. Asking providers about what they may be able to do without City or County assistance (or help short of large infrastructure investments) is a prudent step, and provides an opportunity for input from a broad range of existing or new providers.
- Interest in using dark fiber constructed by local jurisdiction. This is the most basic and lowest level of direct infrastructure investment that entities in the City and County could make, and would require the most additional investment from private partners. JEDO should also seek information regarding the willingness to make additional private investment and build out infrastructure to provide services meeting JEDO's objectives, if dark fiber is available. Although we have modeled an extensive dark fiber build out, JEDO can also probe if a more limited dark fiber build that requires ISPs to construct a large part of the lateral connections needed to pass all premises may be sufficient to spur the needed private investment. JEDO can also seek comment on the potential interest from providers who might use a limited dark fiber network as a platform to support wireless services, either rural wireless services like the one modeled in the fixed wireless scenario, or very high speed 5G services that are emerging now and will continue to emerge over the next several years in cities across the country.
- Interest in various types of roles in a public-private partnership. For example:
    - Interest in in participating as an exclusive (or semi-exclusive) private provider/network operator on the fiber network of one or more local jurisdictions. This type of arrangement provides a commitment to a single company. The RFI can probe what categories of concessions potential partners may be willing to offer for such a commitment, which may range from taking on parts of the investment required, to construction or operating risk-sharing, service levels, and revenue sharing. It can also seek feedback on the most important commitments potential partners would seek from the local jurisdiction(s), which may include things like term commitments, minimum revenue commitments, and preferences for the mix of more desirable and less desirable areas.
    - Interest in participating as a retail provider in lit-fiber open access model. Conceptually, open-access networks provide the opportunity for consumers to reap the benefits of increased competition over a single fiber connection. However, the success of an open-access network depends in no small part on the level of participation by ISPs, who would be key stakeholders. Open access networks are not of interest to every service provider; some require exclusivity while others prefer to own and operate the local access networks on which they deliver service. The RFI can be a valuable tool to gauge the level of interest from ISPs who would consider participating under this model in this market. The RFI can also probe key requirements that participating ISPs would have for things like network interfaces, service levels, service provisioning, billing and collections.

- Interest from wireless service providers. Wireless internet service providers may have different requirements and interests for participation than providers who deliver service over fiber.
- Interest from partners who may wish to own or finance infrastructure investments. In some cases partnerships may rely on public support and assistance but utilize private capital markets in public-private partnerships similar to arrangements that have been utilized to fund other infrastructure investments, such as in transportation and utility sectors. An RFI can help to qualify potential interest in the local market, and understand what some of the essential parameters may be.

Appendix A: Camoin Economic Impact Study Attachments

A.1 What is Economic Impact Analysis?

The purpose of conducting an economic impact study is to ascertain the total cumulative changes in employment, earnings and output in each economy due to some initial "change in final demand". To understand the meaning of "change in final demand", consider the installation of a new widget manufacturer in Anytown, USA. The widget manufacturer sells $1 million worth of its widgets per year exclusively to consumers in Canada. Therefore, the annual change in final demand in the United States is $1 million because dollars are flowing in from outside the United States and are therefore "new" dollars in the economy.

This change in final demand translates into the first round of buying and selling that occurs in an economy. For example, the widget manufacturer must buy its inputs of production (electricity, steel, etc.), must lease or purchase property and pay its workers. This first round is commonly referred to as the "Direct Effects" of the change in final demand and is the basis of additional rounds of buying and selling described below.

To continue this example, the widget manufacturer's vendors (the supplier of electricity and the supplier of steel) will enjoy additional output (i.e. sales) that will sustain their businesses and cause them to make additional purchases in the economy. The steel producer will need more pig iron and the electric company will purchase additional power from generation entities. In this second round, some of those additional purchases will be made in the US economy and some will "leak out". What remains will cause a third round (with leakage) and a fourth (and so on) in ever-diminishing rounds of industry-to-industry purchases. Finally, the widget manufacturer has employees who will naturally spend their wages. Again, those wages spent will either be for local goods and services or will "leak" out of the economy. The purchases of local goods and services will then stimulate other local economic activity. Together, these effects are referred to as the "Indirect Effects" of the change in final demand.

Therefore, the total economic impact resulting from the new widget manufacturer is the initial $1 million of new money (i.e. Direct Effects) flowing in the US economy, plus the Indirect Effects. The ratio of Total Effects to Direct Effects is called the "multiplier effect" and is often reported as a dollar-of-impact per dollar-of-change. Therefore, a multiplier of 2.4 means that for every dollar ($1) of change in final demand, an additional $1.40 of indirect economic activity occurs for a total of $2.40.

Key information for the reader to retain is that this type of analysis requires rigorous and careful consideration of the geography selected (i.e. how the "local economy" is defined) and the implications of the geography on the computation of the change in final demand. If this analysis wanted to consider the impact of the widget manufacturer on the entire North American continent, it would have to conclude that the change in final demand is zero and therefore the economic impact is zero. This is because the $1 million of widgets being purchased by Canadians is not causing total North American demand to increase by $1 million. Presumably, those Canadian purchasers will have $1 million less to spend on other items and the effects of additional widget production will be cancelled out by a commensurate reduction in the purchases of other goods and services.

Changes in final demand, and therefore Direct Effects, can occur in many circumstances. The above example is easiest to understand: the effect of a manufacturer producing locally but selling globally. If, however, 100% of domestic demand for a good is being met by foreign suppliers (say, DVD players being

imported into the US from Korea and Japan), locating a manufacturer of DVD players in the US will cause a change in final demand because all those dollars currently leaving the US economy will instead remain. A situation can be envisioned whereby a producer is serving both local and foreign demand, and an impact analysis would have to be careful in calculating how many "new" dollars the producer would be causing to occur domestically.

A.2 Author's Response

The text, below, is from an email from Bill Gillis to Mike Wilson of CostQuest on Oct 31, 2017.

"Mike,

To understand the percentage growth impact assumption for the three scenarios, we need to consider the full set of assumptions for each scenario.

The Baseline Scenario for Shawnee County Assumes

1. The Shawnee County economy grows at approximately the same average rate as the NE Kansas projected annual growth rate for the next 10 years;
2. Broadband availability and use in Shawnee County over the next ten years will be typical of what is expected for NE Kansas without any proactive efforts to accelerate local broadband investment and usage.
3. Broadband Take Rate by Download Speed (assumed percentage of businesses accessing broadband at each speed tier) for the Baseline Scenario is as follows:

Broadband Take Rate by Bandwidth Speed Assumption by the Year 2020
(only download speeds are represented)

	3 to 10 Mbps	10 to 50 Mbps	> 50 Mbps	> 100 Mbps
Small Business	20%	50%	25%	0%
Large Business	0%	15%	60%	25%
Home-Based Business	30%	50%	20%	0%
Residents	40%	40%	10%	0%
Public Institutions	0%	20%	40%	35%

The Low Impact Scenario for Shawnee County Assumes

1. The Shawnee County economy grows 5% faster than the ten-year economic growth by sector project for Northeast Kansas.
2. Private providers will differentiate broadband availability and use in Shawnee County from competing areas as a result of proactive local efforts and expanded investment.
3. Broadband Take Rate by Download Speed (assumed percentage of businesses accessing broadband at each speed tier) for the Low Impact Scenario is as follows:

Broadband Take Rate by Bandwidth Speed Assumption by the Year 2020
(only download speeds are represented)

	3 to 10 Mbps	10 to 50 Mbps	> 50 Mbps	> 100 Mbps
Small Business	10%	30%	35%	20%
Large Business	0%	10%	40%	50%
Home-Based Business	10%	30%	35%	20%
Residents	25%	25%	25%	20%
Public Institutions	0%	0%	50%	50%

In particular, note the customer broadband take rate increases with scenarios that assume a higher local growth result. I am pretty sure we got the baseline take rates from your models. The scenario rates are loosely calibrated with the Brookings Study (with some nuances that reflect take rate by product category) that was utilized widely at that time by Connected Nations and others. There was no attempt to use the Brookings growth coefficients as a fixed relationship as that would not have been appropriate.

The Effects of Broadband Deployment on Output and Employment: A Cross-Sectional Analysis of U.S. Data (Robert Crandall, William Lehr and Robert Litan, 2007)

https://www.brookings.edu/wp-content/uploads/2016/06/06labor_crandall.pdf

"We find that nonfarm private employment and employment in several industries is positively associated with broadband use. More specifically, for every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year."

Specifically, the Brookings study puts forward that the percent local economic growth is tied to broadband penetration. With their coefficients, a very modest increase in broadband penetration would quickly produce a 5% added economic growth over 10 years. While there are lots of reasons, to not use their coefficients, directly, for a local region analysis, the general principle developed in the Brookings Study that economic growth is directly related to broadband penetration is reflected by several additional studies referenced in the bibliography at the end of the Shawnee County Impact Study.

Some things to keep in mind. The context of our impact study in Kansas was the deployment of a Gigabit network. And at that time, such networks were still not universal, and rarer than today. So, to some extent, the higher scenarios are justified by a "first mover" advantage. A local area with effective interventions that aggressively deploy the Gigabit networks, and effectively build the demand side including attracting / developing new information technology related businesses that need that capacity are going to have a first mover advantage over other cities that are more passive. Consequently, a 15% growth adder high scenario at the time did not seem unrealistic. Now that all fiber networks (and advance wireless options), at least for business customers, are becoming much more common, the first mover advantage may possibly be disappearing. When we did this study, cities committed to both building out their broadband infrastructure and the supportive capacity that accommodates location of information technology businesses was not widespread. Such communities truly could at that time claim a competitive economic development advantage. Have not looked at this recently, so may not be true if we were to repeat the analysis today. Different assumptions might be needed. Side note, the game for cities today should be on the demand side where they can differentiate themselves to business and institutional users. In the end, the basic relationship between penetration and impact is still sound.

The problem for all economists who do projections, the forecast of the future can be verified by actual results that occur. However, there should be some real data soon for the first mover cities to see what the impact on growth from Gigabit networks actually were."

Appendix B: Glossary

Term	*Definition*
Broadband	The provision of high-speed, always-on (as opposed to dial-up), internet access service. While there is no single definition of speeds required for a service to be considered broadband, the Federal Communications Commission defines broadband as a minimum of 25 Mbps download and 3 Mbps upload.
Digital Subscriber Line (DSL)	A family of technologies for providing broadband service over traditional copper phone lines. While a proven technology, DSL has significant technical limitations that drive up the cost of deploying higher-speed DSL networks, the chief of which is that the highest possible speed is only available within a few hundred feet of the DSL head-end equipment. Within that distance, modern DSL networks can achieve speeds of hundreds of megabits per second, albeit at significant cost. Available speeds drop off rapidly as distance from the head end equipment increases. DSL service is generally not available more than 3 miles from the head end equipment.
Dark Fiber	Otherwise unused fiber optic cable strands that are often made available for lease to interested parties. Companies that lay fiber optic cable often provide more than their current needs justify, and it is common for them to lease extra strands.
Fiber-to-the-Premise (FTTP)	A type of broadband network that delivers service to homes and business entirely over fiber optic cables. The current widely-deployed standard provides service at a range of speeds up to and including 1 Gbps.
Fixed Wireless	A type of broadband network that provides service via radio waves. Locations to be served usually have an antenna installed outside, pointing towards a central radio transmitting station. Fixed wireless networks typically provide between 1 Mbps and 50 Mbps to each user, but this is highly dependent on the specific network and ISP.
Fiber-Wireless Network	A broadband network that uses high-capacity fiber optic cables to “backhaul” nodes that distribute broadband via wireless signals to homes and businesses
Gigabit Network	Network having the ability to transfer data at 1 billion bits of information per second; the highest speed levels generally available to consumers today
Gigabit Cities Model (GBCM)	A network and financial modeling tool developed by CostQuest Associates to study the cost and business case for FTTP networks in a variety of communities; used in this study and the 2014 Study
Internet Service Provider (ISP)	An organization that provides a service allowing people or businesses to access the Internet. ISPs can take a variety of forms, including for-profit companies, co-ops, a subsidiary of a municipal utility, or others.
Lit Fiber	Fiber optic strands that are in active use. Can also refer to the service provided via that fiber.
Net Present Value	The difference between cash inflows and outflows over a period of time, where all cash flows are first converted to present dollar figure according to the time value of money principle

OLT and ONT	The Optical Line Termination (OLT) and Optical Network Terminal (ONT) are the electronic equipment that light fiber in FTTP applications. The OLT is at the ISP's head end, while each customer premise has an ONT.
Open Access	A type of network where any qualified entity is permitted to provide service over the network
Success-based capital	Network construction and buildout costs whose magnitude depends on the number of customers signed up for service
Spectrum	A limited natural resource consisting of available radio frequencies. Spectrum suitable for broadband deployment exists in multiple frequency bands in the microwave range, generally above 2 GHz.
Take Rate	The percentage of people who subscribe to service vs the total number of people who could subscribe
Time Value of Money	A core principle of finance that holds a dollar received today has more intrinsic value than a dollar received tomorrow, because today's dollar can be invested to become worth more than one dollar in the future
VoIP / CVoIP	Voice over Internet Protocol is a method of providing standard telephone service over an IP network. Sound is converted to a digital stream, separated into packets suitable for the Internet Protocol, and sent over the Internet or a provider's network. Carrier VoIP is VoIP technology designed with high levels of redundancy and reliability, suitable for providing telephony service to others, typically with only up to a few minutes of downtime in a given year.

Appendix C: Scenario 30-year Business Cases

The tables contained within this section are outputs of the Gigabit Cities Model for the scenarios described within the report, presented over a 30-year period. The section headings refer to the GBCM scenario short name as identified in Table 6 within Section 4, plus the Rural Wireless scenario described in Section 5 of the report.

C.1 Scenarios within City of Topeka

C.1.1 Retail No Structure

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	4,359	11,331	14,700	15,943
			Bus	-	688	2,408	3,669	4,013
			Total	-	5,047	13,738	18,369	19,955
	Data High							
		Average	Res	-	3,742	9,726	12,617	13,684
			Bus	-	619	2,167	3,302	3,611
			Total	-	4,361	11,892	15,919	17,295
	Data Low							
		Average	Res	-	618	1,605	2,083	2,259
			Bus	-	69	241	367	401
			Total	-	686	1,846	2,450	2,660
	Voice							
		Average	Res	-	1,526	3,966	5,145	5,580
			Bus	-	241	843	1,284	1,404
			Total	-	1,767	4,808	6,429	6,984

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	70	70	70	70
			Bus	-	100	100	100	100
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Voice							
		Voice	Res	-	20	20	20	20
			Bus	-	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	16,933	17,943	19,248	20,129	20,212
			Bus	4,242	4,471	4,586	4,586	4,586
			Total	21,175	22,414	23,834	24,715	24,797
	Data High							
		Average	Res	14,535	15,401	16,516	17,259	17,321
			Bus	3,818	4,024	4,127	4,127	4,127
			Total	18,352	19,425	20,643	21,387	21,448
	Data Low							
		Average	Res	2,398	2,543	2,732	2,870	2,890
			Bus	424	447	459	459	459
			Total	2,822	2,990	3,191	3,328	3,349
	Voice							
		Average	Res	5,926	6,280	6,737	7,045	7,074
			Bus	1,485	1,565	1,605	1,605	1,605
			Total	7,411	7,845	8,342	8,650	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

TILSON

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	20,212	20,212	20,212	20,212	20,212
			Bus	4,586	4,586	4,586	4,586	4,586
			Total	24,797	24,797	24,797	24,797	24,797
	Data High							
		Average	Res	17,321	17,321	17,321	17,321	17,321
			Bus	4,127	4,127	4,127	4,127	4,127
			Total	21,448	21,448	21,448	21,448	21,448
	Data Low							
		Average	Res	2,890	2,890	2,890	2,890	2,890
			Bus	459	459	459	459	459
			Total	3,349	3,349	3,349	3,349	3,349
	Voice							
		Average	Res	7,074	7,074	7,074	7,074	7,074
			Bus	1,605	1,605	1,605	1,605	1,605
			Total	8,679	8,679	8,679	8,679	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	**Total Customers**							
		Average	Res	20,212	20,212	20,212	20,212	20,212
			Bus	4,586	4,586	4,586	4,586	4,586
			Total	24,797	24,797	24,797	24,797	24,797
	Data High							
		Average	Res	17,321	17,321	17,321	17,321	17,321
			Bus	4,127	4,127	4,127	4,127	4,127
			Total	21,448	21,448	21,448	21,448	21,448
	Data Low							
		Average	Res	2,890	2,890	2,890	2,890	2,890
			Bus	459	459	459	459	459
			Total	3,349	3,349	3,349	3,349	3,349
	Voice							
		Average	Res	7,074	7,074	7,074	7,074	7,074
			Bus	1,605	1,605	1,605	1,605	1,605
			Total	8,679	8,679	8,679	8,679	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	20,212	20,212	20,212	20,212	20,212
			Bus	4,586	4,586	4,586	4,586	4,586
			Total	24,797	24,797	24,797	24,797	24,797
	Data High							
		Average	Res	17,321	17,321	17,321	17,321	17,321
			Bus	4,127	4,127	4,127	4,127	4,127
			Total	21,448	21,448	21,448	21,448	21,448
	Data Low							
		Average	Res	2,890	2,890	2,890	2,890	2,890
			Bus	459	459	459	459	459
			Total	3,349	3,349	3,349	3,349	3,349
	Voice							
		Average	Res	7,074	7,074	7,074	7,074	7,074
			Bus	1,605	1,605	1,605	1,605	1,605
			Total	8,679	8,679	8,679	8,679	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	**Total Customers**							
		Average	Res	20,212	20,212	20,212	20,212	20,212
			Bus	4,586	4,586	4,586	4,586	4,586
			Total	24,797	24,797	24,797	24,797	24,797
	Data High							
		Average	Res	17,321	17,321	17,321	17,321	17,321
			Bus	4,127	4,127	4,127	4,127	4,127
			Total	21,448	21,448	21,448	21,448	21,448
	Data Low							
		Average	Res	2,890	2,890	2,890	2,890	2,890
			Bus	459	459	459	459	459
			Total	3,349	3,349	3,349	3,349	3,349
	Voice							
		Average	Res	7,074	7,074	7,074	7,074	7,074
			Bus	1,605	1,605	1,605	1,605	1,605
			Total	8,679	8,679	8,679	8,679	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	Total Customers			
		Average	Res	20,212
			Bus	4,586
			Total	24,797
	Data High			
		Average	Res	17,321
			Bus	4,127
			Total	21,448
	Data Low			
		Average	Res	2,890
			Bus	459
			Total	3,349
	Voice			
		Average	Res	7,074
			Bus	1,605
			Total	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	Data High			
		Data High	Res	70
			Bus	100
		NRC	Res	150
			Bus	150
	Data Low			
		Data Low	Res	-
			Bus	-
		NRC	Res	150
			Bus	150
	Voice			
		Voice	Res	20
			Bus	20
		NRC	Res	-
			Bus	-

Financials

Unit	Product	Measure	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	**Data High**						
		Subscription	-	3,886,118	10,769,660	14,560,334	15,828,183
		NRC	-	1,314,844	968,953	280,650	182,176
	Data Low						
		Subscription	-	-	-	-	-
		NRC	-	206,934	144,663	43,070	27,563
	Voice						
		Subscription	-	423,978	1,153,999	1,542,968	1,676,240
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	5,218	14,201	18,988	20,628
	Customer Acquisition						
		Data High	-	438,281	322,984	93,550	60,725
		Data Low	-	13,796	9,644	2,871	1,838
		TOTAL	-	452,077	332,628	96,421	62,563
	Service Install		-	760,889	556,808	161,860	104,870
	Customer Operations, Advertising, G&A		-	2,868,707	4,216,889	4,858,523	5,106,280
	Network operating expenses		-	3,810,333	4,341,315	4,495,447	4,595,124
	TOTAL		**-**	**7,897,224**	**9,461,842**	**9,631,240**	**9,889,464**
EBITDA			**-**	**(2,065,350)**	**3,575,432**	**6,795,781**	**7,824,698**
Tax Depreciation			-	6,555,723	12,502,128	11,214,975	9,406,324
EBIT			**-**	**(8,621,073)**	**(8,926,696)**	**(4,419,194)**	**(1,581,627)**
Interest			-	899,289	946,597	829,061	721,000
Income			**-**	**(9,520,362)**	**(9,873,292)**	**(5,248,255)**	**(2,302,627)**
Tax			-	(2,589,538)	(2,685,536)	(1,427,525)	(626,315)
Net Income			**-**	**(6,930,823)**	**(7,187,757)**	**(3,820,730)**	**(1,676,313)**

Unit	Item	Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment	52,445,782	-	-	-	-
	Success Based	-	12,339,860	9,028,079	2,620,652	1,694,761
	Network Capital Replacment	-	617,166	968,244	1,333,432	1,661,250
	TOTAL	**52,445,782**	**12,957,026**	**9,996,323**	**3,954,084**	**3,356,011**
Free Cash Flow	Raw	(52,445,782)	(12,432,837)	(3,735,355)	4,269,223	5,095,001
	PV	(52,445,782)	(11,915,333)	(3,288,059)	3,451,663	3,783,517
Bond Amortization	Balance		64,785,642	64,785,642	64,785,642	64,785,642
	Principal		-	-	-	2,733,858
	Interest		2,591,426	2,591,426	2,591,426	2,591,426
	Payment		2,591,426	2,591,426	2,591,426	5,325,284

TILSON

Financials

Unit	Product	Measure	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	Data High						
		Subscription	16,790,342	17,765,465	18,825,888	19,450,603	19,502,457
		NRC	188,392	190,000	235,558	50,599	32,173
	Data Low						
		Subscription	-	-	-	-	-
		NRC	29,350	29,601	39,947	11,166	5,023
	Voice						
		Subscription	1,778,660	1,882,809	2,002,015	2,076,060	2,082,974
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		21,889	23,170	24,637	25,548	25,634
	Customer Acquisition						
		Data High	62,797	63,333	78,519	16,866	10,724
		Data Low	1,957	1,973	2,663	744	335
		TOTAL	64,754	65,307	81,182	17,611	11,059
	Service Install		108,871	109,801	137,752	30,882	18,598
	Customer Operations, Advertising, G&A		5,312,639	5,521,906	5,768,265	5,890,004	5,908,759
	Network operating expenses		4,698,519	4,802,695	4,933,412	4,962,075	4,977,154
	TOTAL		**10,206,671**	**10,522,879**	**10,945,250**	**10,926,121**	**10,941,203**
EBITDA			**8,580,073**	**9,344,996**	**10,158,157**	**10,662,307**	**10,681,423**
Tax Depreciation			8,710,257	7,013,255	5,379,769	5,191,355	5,140,041
EBIT			**(130,185)**	**2,331,741**	**4,778,388**	**5,470,952**	**5,541,383**
Interest			643,165	579,592	550,009	523,415	500,157
Income			**(773,350)**	**1,752,149**	**4,228,379**	**4,947,537**	**5,041,226**
Tax			(210,351)	476,585	1,150,119	1,345,730	1,371,213
Net Income			**(562,999)**	**1,275,565**	**3,078,260**	**3,601,807**	**3,670,013**

Unit	Item	Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment	-	-	-	-	-
	Success Based	1,757,993	1,771,259	2,222,540	487,337	256,386
	Network Capital Replacment	1,987,582	2,315,490	2,639,196	2,958,329	3,243,484
	TOTAL	**3,745,575**	**4,086,749**	**4,861,735**	**3,445,667**	**3,499,870**
Free Cash Flow	Raw	5,044,849	4,781,663	4,146,303	5,870,910	5,810,339
	PV	3,440,895	2,995,533	2,385,767	3,102,731	2,820,409
Bond Amortization	Balance	62,051,784	59,208,571	56,251,630	53,176,411	49,978,184
	Principal	2,843,213	2,956,941	3,075,219	3,198,228	3,326,157
	Interest	2,482,071	2,368,343	2,250,065	2,127,056	1,999,127
	Payment	5,325,284	5,325,284	5,325,284	5,325,284	5,325,284

TILSON

Financials

Unit	Product	Measure	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	**Data High**						
		Subscription	19,502,457	19,502,457	19,502,457	19,502,457	19,502,457
		NRC	32,173	32,173	32,173	32,173	32,173
	Data Low						
		Subscription	-	-	-	-	-
		NRC	5,023	5,023	5,023	5,023	5,023
	Voice						
		Subscription	2,082,974	2,082,974	2,082,974	2,082,974	2,082,974
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		25,634	25,634	25,634	25,634	25,634
	Customer Acquisition						
		Data High	10,724	10,724	10,724	10,724	10,724
		Data Low	335	335	335	335	335
		TOTAL	11,059	11,059	11,059	11,059	11,059
	Service Install		18,598	18,598	18,598	18,598	18,598
	Customer Operations, Advertising, G&A		5,919,324	5,929,890	5,940,456	5,951,022	5,961,588
	Network operating expenses		4,994,894	5,012,635	5,030,375	5,048,115	5,065,856
	TOTAL		**10,969,510**	**10,997,816**	**11,026,122**	**11,054,428**	**11,082,734**
EBITDA			**10,653,117**	**10,624,811**	**10,596,505**	**10,568,199**	**10,539,893**
Tax Depreciation			5,108,052	5,191,392	5,354,095	5,508,701	5,692,260
EBIT			**5,545,065**	**5,433,419**	**5,242,410**	**5,059,498**	**4,847,633**
Interest			481,761	466,927	453,602	440,206	426,355
Income			**5,063,304**	**4,966,493**	**4,788,808**	**4,619,292**	**4,421,277**
Tax			1,377,219	1,350,886	1,302,556	1,256,447	1,202,587
Net Income			**3,686,085**	**3,615,607**	**3,486,252**	**3,362,844**	**3,218,690**

Unit	Item	Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment	-	-	-	-	-
	Success Based	301,631	301,631	301,631	301,631	301,631
	Network Capital Replacment	3,500,572	3,727,527	3,920,693	4,078,191	4,199,761
	TOTAL	**3,802,203**	**4,029,158**	**4,222,324**	**4,379,822**	**4,501,392**
Free Cash Flow	Raw	5,473,695	5,244,767	5,071,625	4,931,929	4,835,913
	PV	2,440,411	2,147,734	1,907,538	1,703,785	1,534,434
Bond Amortization	Balance	46,652,027	43,192,824	39,595,253	35,853,779	31,962,646
	Principal	3,459,203	3,597,571	3,741,474	3,891,133	4,046,778
	Interest	1,866,081	1,727,713	1,583,810	1,434,151	1,278,506
	Payment	5,325,284	5,325,284	5,325,284	5,325,284	5,325,284

Financials

Unit	Product	Measure	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	Data High						
		Subscription	19,502,457	19,502,457	19,502,457	19,502,457	19,502,457
		NRC	32,173	32,173	32,173	32,173	32,173
	Data Low						
		Subscription	-	-	-	-	-
		NRC	5,023	5,023	5,023	5,023	5,023
	Voice						
		Subscription	2,082,974	2,082,974	2,082,974	2,082,974	2,082,974
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		25,634	25,634	25,634	25,634	25,634
	Customer Acquisition						
		Data High	10,724	10,724	10,724	10,724	10,724
		Data Low	335	335	335	335	335
		TOTAL	11,059	11,059	11,059	11,059	11,059
	Service Install		18,598	18,598	18,598	18,598	18,598
	Customer Operations, Advertising, G&A		5,972,154	5,982,720	5,993,286	6,003,851	6,014,417
	Network operating expenses		5,083,596	5,101,336	5,119,076	5,136,817	5,154,557
	TOTAL		**11,111,040**	**11,139,346**	**11,167,653**	**11,195,959**	**11,224,265**
EBITDA			**10,511,586**	**10,483,280**	**10,454,974**	**10,426,668**	**10,398,362**
Tax Depreciation			5,921,523	5,372,086	4,604,020	4,449,117	4,373,292
EBIT			**4,590,063**	**5,111,194**	**5,850,954**	**5,977,551**	**6,025,070**
Interest			411,178	393,615	384,004	385,063	388,112
Income			**4,178,885**	**4,717,579**	**5,466,949**	**5,592,487**	**5,636,958**
Tax			1,136,657	1,283,182	1,487,010	1,521,157	1,533,253
Net Income			**3,042,228**	**3,434,398**	**3,979,939**	**4,071,331**	**4,103,705**

Unit	Item	Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment	-	-	-	-	-
	Success Based	301,631	301,631	301,631	301,631	301,631
	Network Capital Replacment	4,286,847	4,342,561	4,371,497	4,379,403	4,369,189
	TOTAL	**4,588,478**	**4,644,192**	**4,673,128**	**4,681,034**	**4,670,820**
Free Cash Flow	Raw	4,786,452	4,555,907	4,294,836	4,224,477	4,194,289
	PV	1,394,939	1,219,518	1,055,922	953,960	869,936
Bond Amortization	Balance	27,915,868	23,707,218	19,330,223	14,778,148	10,043,990
	Principal	4,208,649	4,376,995	4,552,075	4,734,158	4,923,524
	Interest	1,116,635	948,289	773,209	591,126	401,760
	Payment	5,325,284	5,325,284	5,325,284	5,325,284	5,325,284

TILSON

Financials

Unit	Product	Measure	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	Data High						
		Subscription	19,502,457	19,502,457	19,502,457	19,502,457	19,502,457
		NRC	32,173	32,173	32,173	32,173	32,173
	Data Low						
		Subscription	-	-	-	-	-
		NRC	5,023	5,023	5,023	5,023	5,023
	Voice						
		Subscription	2,082,974	2,082,974	2,082,974	2,082,974	2,082,974
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		25,634	25,634	25,634	25,634	25,634
	Customer Acquisition						
		Data High	10,724	10,724	10,724	10,724	10,724
		Data Low	335	335	335	335	335
		TOTAL	11,059	11,059	11,059	11,059	11,059
	Service Install		18,598	18,598	18,598	18,598	18,598
	Customer Operations, Advertising, G&A		6,024,983	6,035,549	6,046,115	6,056,681	6,067,247
	Network operating expenses		5,172,297	5,190,037	5,207,778	5,225,518	5,243,258
	TOTAL		**11,252,571**	**11,280,877**	**11,309,183**	**11,337,489**	**11,365,796**
EBITDA			**10,370,056**	**10,341,750**	**10,313,443**	**10,285,137**	**10,256,831**
Tax Depreciation			4,394,797	4,453,788	4,486,438	4,486,674	4,503,661
EBIT			**5,975,258**	**5,887,962**	**5,827,005**	**5,798,463**	**5,753,170**
Interest			391,986	395,324	397,664	399,477	401,354
Income			**5,583,273**	**5,492,637**	**5,429,341**	**5,398,987**	**5,351,816**
Tax			1,518,650	1,493,997	1,476,781	1,468,524	1,455,694
Net Income			**4,064,622**	**3,998,640**	**3,952,560**	**3,930,462**	**3,896,122**

Unit	Item	Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment	-	-	-	-	-
	Success Based	301,631	301,631	301,631	301,631	301,631
	Network Capital Replacment	4,353,415	4,335,975	4,322,317	4,316,627	4,321,594
	TOTAL	**4,655,046**	**4,637,606**	**4,623,948**	**4,618,259**	**4,623,225**
Free Cash Flow	Raw	4,196,360	4,210,146	4,212,715	4,198,354	4,177,912
	PV	799,417	736,664	677,028	619,720	566,431
Bond Amortization	Balance	5,120,465	-	-	-	-
	Principal	5,120,465	-	-	-	-
	Interest	204,819	-	-	-	-
	Payment	5,325,284	-	-	-	-

TILSON

Financials

Unit	Product	Measure	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	Data High						
		Subscription	19,502,457	19,502,457	19,502,457	19,502,457	19,502,457
		NRC	32,173	32,173	32,173	32,173	32,173
	Data Low						
		Subscription	-	-	-	-	-
		NRC	5,023	5,023	5,023	5,023	5,023
	Voice						
		Subscription	2,082,974	2,082,974	2,082,974	2,082,974	2,082,974
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		25,634	25,634	25,634	25,634	25,634
	Customer Acquisition						
		Data High	10,724	10,724	10,724	10,724	10,724
		Data Low	335	335	335	335	335
		TOTAL	11,059	11,059	11,059	11,059	11,059
	Service Install		18,598	18,598	18,598	18,598	18,598
	Customer Operations, Advertising, G&A		6,077,813	6,088,378	6,098,944	6,109,510	6,120,076
	Network operating expenses		5,260,999	5,278,739	5,296,479	5,314,219	5,331,960
	TOTAL		**11,394,102**	**11,422,408**	**11,450,714**	**11,479,020**	**11,507,326**
EBITDA			**10,228,525**	**10,200,219**	**10,171,913**	**10,143,606**	**10,115,300**
Tax Depreciation			4,542,305	4,570,892	4,597,547	4,624,750	4,653,528
EBIT			**5,686,219**	**5,629,327**	**5,574,365**	**5,518,857**	**5,461,772**
Interest			403,228	404,959	406,820	408,943	411,386
Income			**5,282,991**	**5,224,368**	**5,167,545**	**5,109,914**	**5,050,386**
Tax			1,436,974	1,421,028	1,405,572	1,389,897	1,373,705
Net Income			**3,846,017**	**3,803,340**	**3,761,973**	**3,720,017**	**3,676,681**

Unit	Item	Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment	-	-	-	-	-
	Success Based	301,631	301,631	301,631	301,631	301,631
	Network Capital Replacment	4,338,335	4,366,517	4,404,620	4,450,306	4,500,822
	TOTAL	**4,639,966**	**4,668,148**	**4,706,251**	**4,751,937**	**4,802,453**
Free Cash Flow	Raw	4,151,585	4,111,042	4,060,089	4,001,773	3,939,142
	PV	516,980	470,201	426,520	386,125	349,099
Bond Amortization	Balance	-	-	-	-	-
	Principal	-	-	-	-	-
	Interest	-	-	-	-	-
	Payment	-	-	-	-	-

Financials

Unit	Product	Measure		Year 30
Revenues	Data High			
		Subscription		19,502,457
		NRC		32,173
	Data Low			
		Subscription		-
		NRC		5,023
	Voice			
		Subscription		2,082,974
		NRC		-
Operational Costs	Voice expenses			25,634
	Customer Acquisition			
		Data High		10,724
		Data Low		335
		TOTAL		11,059
	Service Install			18,598
	Customer Operations, Advertising, G&A			6,130,642
	Network operating expenses			5,349,700
	TOTAL			**11,535,633**
EBITDA				**10,086,994**
Tax Depreciation				4,684,426
EBIT				**5,402,568**
Interest				414,157
Income				**4,988,411**
Tax				1,356,848
Net Income				**3,631,563**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			301,631
	Network Capital Replacment			4,553,378
	TOTAL			**4,855,009**
Free Cash Flow	Raw			3,875,137
	PV			315,432
Bond Amortization	Balance			-
	Principal			-
	Interest			-
	Payment			-

TILSON

C.1.2 Retail With Structure

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	4,359	11,331	14,700	15,943
			Bus	-	688	2,408	3,669	4,013
			Total	-	5,047	13,738	18,369	19,955
	Data High							
		Average	Res	-	3,742	9,726	12,617	13,684
			Bus	-	619	2,167	3,302	3,611
			Total	-	4,361	11,892	15,919	17,295
	Data Low							
		Average	Res	-	618	1,605	2,083	2,259
			Bus	-	69	241	367	401
			Total	-	686	1,846	2,450	2,660
	Voice							
		Average	Res	-	1,526	3,966	5,145	5,580
			Bus	-	241	843	1,284	1,404
			Total	-	1,767	4,808	6,429	6,984

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	70	70	70	70
			Bus	-	100	100	100	100
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Voice							
		Voice	Res	-	20	20	20	20
			Bus	-	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	16,933	17,943	19,248	20,129	20,212
			Bus	4,242	4,471	4,586	4,586	4,586
			Total	21,175	22,414	23,834	24,715	24,797
	Data High							
		Average	Res	14,535	15,401	16,516	17,259	17,321
			Bus	3,818	4,024	4,127	4,127	4,127
			Total	18,352	19,425	20,643	21,387	21,448
	Data Low							
		Average	Res	2,398	2,543	2,732	2,870	2,890
			Bus	424	447	459	459	459
			Total	2,822	2,990	3,191	3,328	3,349
	Voice							
		Average	Res	5,926	6,280	6,737	7,045	7,074
			Bus	1,485	1,565	1,605	1,605	1,605
			Total	7,411	7,845	8,342	8,650	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	20,212	20,212	20,212	20,212	20,212
			Bus	4,586	4,586	4,586	4,586	4,586
			Total	24,797	24,797	24,797	24,797	24,797
	Data High							
		Average	Res	17,321	17,321	17,321	17,321	17,321
			Bus	4,127	4,127	4,127	4,127	4,127
			Total	21,448	21,448	21,448	21,448	21,448
	Data Low							
		Average	Res	2,890	2,890	2,890	2,890	2,890
			Bus	459	459	459	459	459
			Total	3,349	3,349	3,349	3,349	3,349
	Voice							
		Average	Res	7,074	7,074	7,074	7,074	7,074
			Bus	1,605	1,605	1,605	1,605	1,605
			Total	8,679	8,679	8,679	8,679	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	**Total Customers**							
		Average	Res	20,212	20,212	20,212	20,212	20,212
			Bus	4,586	4,586	4,586	4,586	4,586
			Total	24,797	24,797	24,797	24,797	24,797
	Data High							
		Average	Res	17,321	17,321	17,321	17,321	17,321
			Bus	4,127	4,127	4,127	4,127	4,127
			Total	21,448	21,448	21,448	21,448	21,448
	Data Low							
		Average	Res	2,890	2,890	2,890	2,890	2,890
			Bus	459	459	459	459	459
			Total	3,349	3,349	3,349	3,349	3,349
	Voice							
		Average	Res	7,074	7,074	7,074	7,074	7,074
			Bus	1,605	1,605	1,605	1,605	1,605
			Total	8,679	8,679	8,679	8,679	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	20,212	20,212	20,212	20,212	20,212
			Bus	4,586	4,586	4,586	4,586	4,586
			Total	24,797	24,797	24,797	24,797	24,797
	Data High							
		Average	Res	17,321	17,321	17,321	17,321	17,321
			Bus	4,127	4,127	4,127	4,127	4,127
			Total	21,448	21,448	21,448	21,448	21,448
	Data Low							
		Average	Res	2,890	2,890	2,890	2,890	2,890
			Bus	459	459	459	459	459
			Total	3,349	3,349	3,349	3,349	3,349
	Voice							
		Average	Res	7,074	7,074	7,074	7,074	7,074
			Bus	1,605	1,605	1,605	1,605	1,605
			Total	8,679	8,679	8,679	8,679	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	**Total Customers**							
		Average	Res	20,212	20,212	20,212	20,212	20,212
			Bus	4,586	4,586	4,586	4,586	4,586
			Total	24,797	24,797	24,797	24,797	24,797
	Data High							
		Average	Res	17,321	17,321	17,321	17,321	17,321
			Bus	4,127	4,127	4,127	4,127	4,127
			Total	21,448	21,448	21,448	21,448	21,448
	Data Low							
		Average	Res	2,890	2,890	2,890	2,890	2,890
			Bus	459	459	459	459	459
			Total	3,349	3,349	3,349	3,349	3,349
	Voice							
		Average	Res	7,074	7,074	7,074	7,074	7,074
			Bus	1,605	1,605	1,605	1,605	1,605
			Total	8,679	8,679	8,679	8,679	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	**Total Customers**			
		Average	Res	20,212
			Bus	4,586
			Total	24,797
	Data High			
		Average	Res	17,321
			Bus	4,127
			Total	21,448
	Data Low			
		Average	Res	2,890
			Bus	459
			Total	3,349
	Voice			
		Average	Res	7,074
			Bus	1,605
			Total	8,679

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	**Data High**			
		Data High	Res	70
			Bus	100
		NRC	Res	150
			Bus	150
	Data Low			
		Data Low	Res	-
			Bus	-
		NRC	Res	150
			Bus	150
	Voice			
		Voice	Res	20
			Bus	20
		NRC	Res	-
			Bus	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	**Data High**							
		Subscription		-	3,886,118	10,769,660	14,560,334	15,828,183
		NRC		-	1,314,844	968,953	280,650	182,176
	Data Low							
		Subscription		-	-	-	-	-
		NRC		-	206,934	144,663	43,070	27,563
	Voice							
		Subscription		-	423,978	1,153,999	1,542,968	1,676,240
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	5,218	14,201	18,988	20,628
	Customer Acquisition							
		Data High		-	438,281	322,984	93,550	60,725
		Data Low		-	13,796	9,644	2,871	1,838
		TOTAL		-	452,077	332,628	96,421	62,563
	Service Install			-	760,889	556,808	161,860	104,870
	Customer Operations, Advertising, G&A			-	2,879,207	4,243,664	4,890,023	5,140,834
	Network operating expenses			-	3,825,215	4,383,122	4,545,070	4,649,801
	TOTAL			**-**	**7,922,606**	**9,530,424**	**9,712,362**	**9,978,696**
EBITDA				**-**	**(2,090,732)**	**3,506,850**	**6,714,659**	**7,735,466**
Tax Depreciation				-	6,513,812	12,511,444	11,357,761	9,576,496
EBIT				**-**	**(8,604,545)**	**(9,004,594)**	**(4,643,102)**	**(1,841,030)**
Interest				-	2,603,416	2,603,416	2,603,416	2,603,416
Income				**-**	**(11,207,961)**	**(11,608,010)**	**(7,246,518)**	**(4,444,446)**
Tax				-	(134,496)	(139,296)	(86,958)	(53,333)
Net Income				**-**	**(11,073,465)**	**(11,468,714)**	**(7,159,560)**	**(4,391,113)**

Unit	Item			Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment			52,110,499	-	-	-	-
	Success Based			-	12,974,906	9,492,691	2,755,518	1,781,979
	Network Capital Replacment			-	613,220	970,455	1,342,258	1,674,680
	TOTAL			**52,110,499**	**13,588,127**	**10,463,146**	**4,097,776**	**3,456,659**
Free Cash Flow	Raw			-	(5,172,873)	(9,420,416)	100,425	(1,017,784)
	PV			-	(5,072,420)	(8,882,191)	91,045	(887,235)
Bond Amortization	Balance				65,085,405	65,085,405	65,085,405	65,085,405
	Principal				-	-	-	2,746,508
	Interest				2,603,416	2,603,416	2,603,416	2,603,416
	Payment				2,603,416	2,603,416	2,603,416	5,349,924

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	Data High							
		Subscription		16,790,342	17,765,465	18,825,888	19,450,603	19,502,457
		NRC		188,392	190,000	235,558	50,599	32,173
	Data Low							
		Subscription		-	-	-	-	-
		NRC		29,350	29,601	39,947	11,166	5,023
	Voice							
		Subscription		1,778,660	1,882,809	2,002,015	2,076,060	2,082,974
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			21,889	23,170	24,637	25,548	25,634
	Customer Acquisition							
		Data High		62,797	63,333	78,519	16,866	10,724
		Data Low		1,957	1,973	2,663	744	335
		TOTAL		64,754	65,307	81,182	17,611	11,059
	Service Install			108,871	109,801	137,752	30,882	18,598
	Customer Operations, Advertising, G&A			5,350,363	5,562,823	5,813,189	5,935,806	5,955,023
	Network operating expenses			4,758,439	4,867,897	5,005,243	5,035,359	5,051,203
	TOTAL			**10,304,315**	**10,628,998**	**11,062,004**	**11,045,207**	**11,061,517**
EBITDA				**8,482,429**	**9,238,877**	**10,041,403**	**10,543,220**	**10,561,110**
Tax Depreciation				8,847,145	7,150,626	5,515,362	5,307,639	5,243,818
EBIT				**(364,716)**	**2,088,251**	**4,526,041**	**5,235,582**	**5,317,292**
Interest				2,493,556	2,379,301	2,260,476	2,136,898	2,008,377
Income				**(2,858,272)**	**(291,050)**	**2,265,565**	**3,098,683**	**3,308,914**
Tax				(34,299)	(3,493)	27,187	37,184	39,707
Net Income				**(2,823,973)**	**(287,557)**	**2,238,378**	**3,061,499**	**3,269,207**

Unit	Item			Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment			-	-	-	-	-
	Success Based			1,848,465	1,862,413	2,336,918	512,417	269,581
	Network Capital Replacment			2,005,657	2,338,630	2,667,748	2,992,848	3,283,218
	TOTAL			**3,854,122**	**4,201,043**	**5,004,666**	**3,505,265**	**3,552,799**
Free Cash Flow	Raw			(687,318)	(308,597)	(340,374)	1,650,847	1,618,680
	PV			(576,113)	(248,719)	(263,778)	1,230,147	1,159,786
Bond Amortization	Balance			62,338,897	59,482,529	56,511,906	53,422,458	50,209,432
	Principal			2,856,368	2,970,623	3,089,448	3,213,026	3,341,547
	Interest			2,493,556	2,379,301	2,260,476	2,136,898	2,008,377
	Payment			5,349,924	5,349,924	5,349,924	5,349,924	5,349,924

Financials

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	Data High							
		Subscription		19,502,457	19,502,457	19,502,457	19,502,457	19,502,457
		NRC		32,173	32,173	32,173	32,173	32,173
	Data Low							
		Subscription		-	-	-	-	-
		NRC		5,023	5,023	5,023	5,023	5,023
	Voice							
		Subscription		2,082,974	2,082,974	2,082,974	2,082,974	2,082,974
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			25,634	25,634	25,634	25,634	25,634
	Customer Acquisition							
		Data High		10,724	10,724	10,724	10,724	10,724
		Data Low		335	335	335	335	335
		TOTAL		11,059	11,059	11,059	11,059	11,059
	Service Install			18,598	18,598	18,598	18,598	18,598
	Customer Operations, Advertising, G&A			5,966,132	5,977,242	5,988,352	5,999,461	6,010,571
	Network operating expenses			5,069,843	5,088,483	5,107,123	5,125,763	5,144,402
	TOTAL			**11,091,266**	**11,121,016**	**11,150,765**	**11,180,515**	**11,210,264**
EBITDA				10,531,361	10,501,611	10,471,862	10,442,112	10,412,363
Tax Depreciation				5,200,665	5,278,668	5,440,758	5,594,649	5,779,555
EBIT				5,330,695	5,222,943	5,031,103	4,847,463	4,632,807
Interest				1,874,715	1,735,707	1,591,138	1,440,787	1,284,421
Income				3,455,980	3,487,236	3,439,965	3,406,676	3,348,386
Tax				41,472	41,847	41,280	40,880	40,181
Net Income				3,414,508	3,445,389	3,398,685	3,365,796	3,308,205

Unit	Item			Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment			-	-	-	-	-
	Success Based			317,154	317,154	317,154	317,154	317,154
	Network Capital Replacment			3,545,254	3,776,924	3,974,468	4,135,935	4,261,004
	TOTAL			**3,862,408**	**4,094,078**	**4,291,622**	**4,453,089**	**4,578,158**
Free Cash Flow	Raw			1,277,556	1,015,762	789,036	598,219	444,100
	PV			880,163	672,887	502,589	366,390	261,535
Bond Amortization	Balance			46,867,885	43,392,677	39,778,460	36,019,674	32,110,537
	Principal			3,475,209	3,614,217	3,758,786	3,909,137	4,065,503
	Interest			1,874,715	1,735,707	1,591,138	1,440,787	1,284,421
	Payment			5,349,924	5,349,924	5,349,924	5,349,924	5,349,924

Financials

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	Data High							
		Subscription		19,502,457	19,502,457	19,502,457	19,502,457	19,502,457
		NRC		32,173	32,173	32,173	32,173	32,173
	Data Low							
		Subscription		-	-	-	-	-
		NRC		5,023	5,023	5,023	5,023	5,023
	Voice							
		Subscription		2,082,974	2,082,974	2,082,974	2,082,974	2,082,974
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			25,634	25,634	25,634	25,634	25,634
	Customer Acquisition							
		Data High		10,724	10,724	10,724	10,724	10,724
		Data Low		335	335	335	335	335
		TOTAL		11,059	11,059	11,059	11,059	11,059
	Service Install			18,598	18,598	18,598	18,598	18,598
	Customer Operations, Advertising, G&A			6,021,681	6,032,790	6,043,900	6,055,009	6,066,119
	Network operating expenses			5,163,042	5,181,682	5,200,322	5,218,962	5,237,602
	TOTAL			**11,240,013**	**11,269,763**	**11,299,512**	**11,329,262**	**11,359,011**
EBITDA				**10,382,613**	**10,352,864**	**10,323,114**	**10,293,365**	**10,263,615**
Tax Depreciation				6,013,168	5,473,149	4,705,073	4,538,014	4,455,037
EBIT				**4,369,445**	**4,879,715**	**5,618,042**	**5,755,351**	**5,808,578**
Interest				1,121,801	952,676	776,787	593,861	403,619
Income				**3,247,644**	**3,927,039**	**4,841,255**	**5,161,490**	**5,404,960**
Tax				38,972	47,124	58,095	61,938	64,860
Net Income				**3,208,672**	**3,879,914**	**4,783,160**	**5,099,552**	**5,340,100**

Unit	Item			Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment			-	-	-	-	-
	Success Based			317,154	317,154	317,154	317,154	317,154
	Network Capital Replacment			4,351,084	4,409,271	4,440,171	4,449,569	4,440,250
	TOTAL			**4,668,238**	**4,726,425**	**4,757,325**	**4,766,723**	**4,757,404**
Free Cash Flow	Raw			325,480	229,390	157,770	114,780	91,428
	PV			184,306	124,899	82,599	57,781	44,255
Bond Amortization	Balance			28,045,034	23,816,912	19,419,664	14,846,526	10,090,463
	Principal			4,228,123	4,397,248	4,573,138	4,756,063	4,946,306
	Interest			1,121,801	952,676	776,787	593,861	403,619
	Payment			5,349,924	5,349,924	5,349,924	5,349,924	5,349,924

Financials

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	**Data High**							
		Subscription		19,502,457	19,502,457	19,502,457	19,502,457	19,502,457
		NRC		32,173	32,173	32,173	32,173	32,173
	Data Low							
		Subscription		-	-	-	-	-
		NRC		5,023	5,023	5,023	5,023	5,023
	Voice							
		Subscription		2,082,974	2,082,974	2,082,974	2,082,974	2,082,974
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			25,634	25,634	25,634	25,634	25,634
	Customer Acquisition							
		Data High		10,724	10,724	10,724	10,724	10,724
		Data Low		335	335	335	335	335
		TOTAL		11,059	11,059	11,059	11,059	11,059
	Service Install			18,598	18,598	18,598	18,598	18,598
	Customer Operations, Advertising, G&A			6,077,229	6,088,338	6,099,448	6,110,558	6,121,667
	Network operating expenses			5,256,241	5,274,881	5,293,521	5,312,161	5,330,801
	TOTAL			**11,388,761**	**11,418,510**	**11,448,260**	**11,478,009**	**11,507,759**
EBITDA				**10,233,866**	**10,204,116**	**10,174,367**	**10,144,617**	**10,114,868**
Tax Depreciation				4,475,232	4,535,544	4,568,717	4,568,213	4,585,581
EBIT				**5,758,634**	**5,668,572**	**5,605,649**	**5,576,405**	**5,529,287**
Interest				205,766	-	-	-	-
Income				**5,552,868**	**5,668,572**	**5,605,649**	**5,576,405**	**5,529,287**
Tax				66,634	68,023	67,268	66,917	66,351
Net Income				**5,486,233**	**5,600,549**	**5,538,382**	**5,509,488**	**5,462,936**

Unit	Item			Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment			-	-	-	-	-
	Success Based			317,154	317,154	317,154	317,154	317,154
	Network Capital Replacment			4,425,159	4,408,160	4,394,798	4,389,355	4,394,606
	TOTAL			**4,742,313**	**4,725,314**	**4,711,952**	**4,706,509**	**4,711,760**
Free Cash Flow	Raw			74,994	5,410,779	5,395,148	5,371,191	5,336,757
	PV			34,904	2,421,455	2,321,595	2,222,391	2,123,215
Bond Amortization	Balance			5,144,158	-	-	-	-
	Principal			5,144,158	-	-	-	-
	Interest			205,766	-	-	-	-
	Payment			5,349,924	-	-	-	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	Data High							
		Subscription		19,502,457	19,502,457	19,502,457	19,502,457	19,502,457
		NRC		32,173	32,173	32,173	32,173	32,173
	Data Low							
		Subscription		-	-	-	-	-
		NRC		5,023	5,023	5,023	5,023	5,023
	Voice							
		Subscription		2,082,974	2,082,974	2,082,974	2,082,974	2,082,974
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			25,634	25,634	25,634	25,634	25,634
	Customer Acquisition							
		Data High		10,724	10,724	10,724	10,724	10,724
		Data Low		335	335	335	335	335
		TOTAL		11,059	11,059	11,059	11,059	11,059
	Service Install			18,598	18,598	18,598	18,598	18,598
	Customer Operations, Advertising, G&A			6,132,777	6,143,886	6,154,996	6,166,106	6,177,215
	Network operating expenses			5,349,441	5,368,081	5,386,720	5,405,360	5,424,000
	TOTAL			**11,537,508**	**11,567,258**	**11,597,007**	**11,626,757**	**11,656,506**
EBITDA				**10,085,118**	**10,055,369**	**10,025,620**	**9,995,870**	**9,966,121**
Tax Depreciation				4,625,853	4,655,577	4,683,226	4,711,361	4,741,047
EBIT				**5,459,266**	**5,399,792**	**5,342,393**	**5,284,509**	**5,225,074**
Interest				-	-	-	-	-
Income				**5,459,266**	**5,399,792**	**5,342,393**	**5,284,509**	**5,225,074**
Tax				65,511	64,798	64,109	63,414	62,701
Net Income				**5,393,755**	**5,334,994**	**5,278,284**	**5,221,095**	**5,162,373**

Unit	Item			Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment			-	-	-	-	-
	Success Based			317,154	317,154	317,154	317,154	317,154
	Network Capital Replacment			4,411,735	4,440,458	4,479,278	4,525,859	4,577,433
	TOTAL			**4,728,889**	**4,757,612**	**4,796,432**	**4,843,013**	**4,894,587**
Free Cash Flow	Raw			5,290,718	5,232,960	5,165,079	5,089,443	5,008,833
	PV			2,023,941	1,924,852	1,826,810	1,730,826	1,637,896
Bond Amortization	Balance			-	-	-	-	-
	Principal			-	-	-	-	-
	Interest			-	-	-	-	-
	Payment			-	-	-	-	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 30
Revenues	Data High			
		Subscription		19,502,457
		NRC		32,173
	Data Low			
		Subscription		-
		NRC		5,023
	Voice			
		Subscription		2,082,974
		NRC		-
Operational Costs	Voice expenses			25,634
	Customer Acquisition			
		Data High		10,724
		Data Low		335
		TOTAL		11,059
	Service Install			18,598
	Customer Operations, Advertising, G&A			6,188,325
	Network operating expenses			5,442,640
	TOTAL			**11,686,256**
EBITDA				**9,936,371**
Tax Depreciation				4,772,859
EBIT				**5,163,512**
Interest				-
Income				**5,163,512**
Tax				61,962
Net Income				**5,101,550**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			317,154
	Network Capital Replacment			4,631,178
	TOTAL			**4,948,332**
Free Cash Flow	Raw			4,926,077
	PV			1,548,880
Bond Amortization	Balance			-
	Principal			-
	Interest			-
	Payment			-

TILSON

C.1.3 Open Access

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	54,007	54,007	54,007	54,007
			Bus	-	8,981	8,981	8,981	8,981
			Total	-	62,988	62,988	62,988	62,988
	Data High							
		Average	Res	-	3,868	10,055	13,045	14,147
			Bus	-	576	2,016	3,072	3,359
			Total	-	4,444	12,071	16,116	17,507
	Data Low							
		Average	Res	-	54,007	54,007	54,007	54,007
			Bus	-	8,981	8,981	8,981	8,981
			Total	-	62,988	62,988	62,988	62,988
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	15	15	15	15
			Bus	-	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	-	37	37	37	37
			Bus	-	37	37	37	37
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Data High							
		Average	Res	15,026	15,921	17,067	17,830	17,894
			Bus	3,551	3,743	3,839	3,839	3,839
			Total	18,577	19,664	20,907	21,670	21,733
	Data Low							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	37	37	37	37	37
			Bus	37	37	37	37	37
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Data High							
		Average	Res	17,894	17,894	17,894	17,894	17,894
			Bus	3,839	3,839	3,839	3,839	3,839
			Total	21,733	21,733	21,733	21,733	21,733
	Data Low							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	37	37	37	37	37
			Bus	37	37	37	37	37
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	**Total Customers**							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Data High							
		Average	Res	17,894	17,894	17,894	17,894	17,894
			Bus	3,839	3,839	3,839	3,839	3,839
			Total	21,733	21,733	21,733	21,733	21,733
	Data Low							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	**Data High**							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	37	37	37	37	37
			Bus	37	37	37	37	37
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Data High							
		Average	Res	17,894	17,894	17,894	17,894	17,894
			Bus	3,839	3,839	3,839	3,839	3,839
			Total	21,733	21,733	21,733	21,733	21,733
	Data Low							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	37	37	37	37	37
			Bus	37	37	37	37	37
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	**Total Customers**							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Data High							
		Average	Res	17,894	17,894	17,894	17,894	17,894
			Bus	3,839	3,839	3,839	3,839	3,839
			Total	21,733	21,733	21,733	21,733	21,733
	Data Low							
		Average	Res	54,007	54,007	54,007	54,007	54,007
			Bus	8,981	8,981	8,981	8,981	8,981
			Total	62,988	62,988	62,988	62,988	62,988
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	**Data High**							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	37	37	37	37	37
			Bus	37	37	37	37	37
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	Total Customers			
		Average	Res	54,007
			Bus	8,981
			Total	62,988
	Data High			
		Average	Res	17,894
			Bus	3,839
			Total	21,733
	Data Low			
		Average	Res	54,007
			Bus	8,981
			Total	62,988
	Voice			
		Average	Res	-
			Bus	-
			Total	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	Data High			
		Data High	Res	15
			Bus	15
		NRC	Res	-
			Bus	-
	Data Low			
		Data Low	Res	37
			Bus	37
		NRC	Res	-
			Bus	-
	Voice			
		Voice	Res	-
			Bus	-
		NRC	Res	-
			Bus	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	**Data High**							
		Subscription		-	799,965	2,172,757	2,900,919	3,151,200
		NRC		-	-	-	-	-
	Data Low							
		Subscription		-	27,896,272	27,896,272	27,896,272	27,896,272
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			-	47,241	47,241	47,241	47,241
	Customer Operations, Advertising, G&A			-	5,017,767	5,030,100	5,042,370	5,054,577
	Network operating expenses			-	7,176,335	7,213,231	7,249,940	7,286,462
	TOTAL			**-**	**12,241,343**	**12,290,572**	**12,339,551**	**12,388,280**
EBITDA				**-**	**16,454,895**	**17,778,457**	**18,457,641**	**18,659,193**
Tax Depreciation				-	8,095,265	22,557,651	24,445,384	17,269,330
EBIT				**-**	**8,359,629**	**(4,779,194)**	**(5,987,743)**	**1,389,862**
Interest				-	5,478,244	5,478,244	5,478,244	5,478,244
Income				**-**	**2,881,385**	**(10,257,438)**	**(11,465,987)**	**(4,088,382)**
Tax				-	25,932	(92,317)	(103,194)	(36,795)
Net Income				**-**	**2,855,452**	**(10,165,121)**	**(11,362,793)**	**(4,051,587)**

Unit	Item			Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment			64,762,123	-	-	-	-
	Success Based			-	72,193,985	704,140	700,565	696,991
	Network Capital Replacment			-	762,101	1,865,869	2,417,487	2,980,071
	TOTAL			**64,762,123**	**72,956,086**	**2,570,009**	**3,118,053**	**3,677,062**
Free Cash Flow	Raw			-	10,188,617	9,822,521	9,964,538	3,761,336
	PV			-	9,990,761	9,261,321	9,033,869	3,278,880
Bond Amortization	Balance				136,956,109	136,956,109	136,956,109	136,956,109
	Principal				-	-	-	5,779,345
	Interest				5,478,244	5,478,244	5,478,244	5,478,244
	Payment				5,478,244	5,478,244	5,478,244	11,257,590

Financials

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	**Data High**							
		Subscription		3,343,943	3,539,539	3,763,220	3,900,514	3,911,925
		NRC		-	-	-	-	-
	Data Low							
		Subscription		27,896,272	27,896,272	27,896,272	27,896,272	27,896,272
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			47,241	47,241	47,241	47,241	47,241
	Customer Operations, Advertising, G&A			5,066,722	5,078,804	5,090,824	5,102,781	5,113,423
	Network operating expenses			7,322,796	7,358,943	7,394,902	7,430,675	7,462,514
	TOTAL			**12,436,759**	**12,484,988**	**12,532,967**	**12,580,697**	**12,623,178**
EBITDA				**18,803,457**	**18,950,824**	**19,126,525**	**19,216,089**	**19,185,019**
Tax Depreciation				14,448,603	12,585,086	8,809,653	7,106,451	7,575,777
EBIT				**4,354,854**	**6,365,738**	**10,316,872**	**12,109,638**	**11,609,242**
Interest				5,247,071	5,006,650	4,756,612	4,496,573	4,226,132
Income				**(892,217)**	**1,359,088**	**5,560,260**	**7,613,065**	**7,383,110**
Tax				(8,030)	12,232	50,042	68,518	66,448
Net Income				**(884,187)**	**1,346,856**	**5,510,217**	**7,544,548**	**7,316,662**

Unit	Item			Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment			-	-	-	-	-
	Success Based			693,417	689,843	686,268	682,694	607,633
	Network Capital Replacment			3,544,983	4,102,674	4,643,015	5,155,721	5,630,856
	TOTAL			**4,238,400**	**4,792,517**	**5,329,284**	**5,838,414**	**6,238,490**
Free Cash Flow	Raw			3,315,498	2,888,486	2,489,609	2,051,568	1,622,492
	PV			2,779,065	2,328,021	1,929,365	1,528,748	1,162,517
Bond Amortization	Balance			131,176,763	125,166,244	118,915,304	112,414,327	105,653,310
	Principal			6,010,519	6,250,940	6,500,978	6,761,017	7,031,457
	Interest			5,247,071	5,006,650	4,756,612	4,496,573	4,226,132
	Payment			11,257,590	11,257,590	11,257,590	11,257,590	11,257,590

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	Data High							
		Subscription		3,911,925	3,911,925	3,911,925	3,911,925	3,911,925
		NRC		-	-	-	-	-
	Data Low							
		Subscription		27,896,272	27,896,272	27,896,272	27,896,272	27,896,272
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			47,241	47,241	47,241	47,241	47,241
	Customer Operations, Advertising, G&A			5,125,944	5,138,464	5,150,985	5,163,506	5,176,026
	Network operating expenses			7,499,972	7,537,430	7,574,888	7,612,346	7,649,804
	TOTAL			**12,673,157**	**12,723,135**	**12,773,114**	**12,823,092**	**12,873,071**
EBITDA				**19,135,041**	**19,085,062**	**19,035,084**	**18,985,106**	**18,935,127**
Tax Depreciation				8,036,846	8,501,917	8,972,395	9,419,264	9,844,451
EBIT				**11,098,195**	**10,583,146**	**10,062,689**	**9,565,841**	**9,090,676**
Interest				3,944,874	3,652,365	3,348,157	3,031,779	2,702,747
Income				**7,153,321**	**6,930,780**	**6,714,533**	**6,534,062**	**6,387,929**
Tax				64,380	62,377	60,431	58,807	57,491
Net Income				**7,088,941**	**6,868,403**	**6,654,102**	**6,475,256**	**6,330,438**

Unit	Item			Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment			-	-	-	-	-
	Success Based			714,863	714,863	714,863	714,863	714,863
	Network Capital Replacment			6,058,572	6,433,237	6,748,606	7,001,858	7,193,077
	TOTAL			**6,773,434**	**7,148,099**	**7,463,469**	**7,716,720**	**7,907,940**
Free Cash Flow	Raw			1,039,637	616,996	253,595	(48,011)	(287,894)
	PV			716,250	408,726	161,531	(29,405)	(169,544)
Bond Amortization	Balance			98,621,853	91,309,137	83,703,913	75,794,479	67,568,669
	Principal			7,312,716	7,605,224	7,909,433	8,225,811	8,554,843
	Interest			3,944,874	3,652,365	3,348,157	3,031,779	2,702,747
	Payment			11,257,590	11,257,590	11,257,590	11,257,590	11,257,590

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	**Data High**							
		Subscription		3,911,925	3,911,925	3,911,925	3,911,925	3,911,925
		NRC		-	-	-	-	-
	Data Low							
		Subscription		27,896,272	27,896,272	27,896,272	27,896,272	27,896,272
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			47,241	47,241	47,241	47,241	47,241
	Customer Operations, Advertising, G&A			5,188,547	5,201,067	5,213,588	5,226,108	5,238,629
	Network operating expenses			7,687,262	7,724,719	7,762,177	7,799,635	7,837,093
	TOTAL			**12,923,049**	**12,973,027**	**13,023,006**	**13,072,984**	**13,122,963**
EBITDA				**18,885,149**	**18,835,170**	**18,785,192**	**18,735,213**	**18,685,235**
Tax Depreciation				10,246,288	9,669,911	7,979,077	7,168,874	7,280,052
EBIT				**8,638,860**	**9,165,260**	**10,806,115**	**11,566,340**	**11,405,183**
Interest				2,360,553	2,004,672	1,634,555	1,249,633	849,315
Income				**6,278,307**	**7,160,588**	**9,171,560**	**10,316,706**	**10,555,867**
Tax				56,505	64,445	82,544	92,850	95,003
Net Income				**6,221,803**	**7,096,143**	**9,089,016**	**10,223,856**	**10,460,865**

Unit	Item			Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment			-	-	-	-	-
	Success Based			714,863	714,863	714,863	714,863	714,863
	Network Capital Replacment			7,325,402	7,404,922	7,440,316	7,442,231	7,414,035
	TOTAL			**8,040,265**	**8,119,785**	**8,155,179**	**8,157,094**	**8,128,898**
Free Cash Flow	Raw			(469,211)	(606,650)	(710,121)	(772,320)	(796,256)
	PV			(265,696)	(330,310)	(371,777)	(388,789)	(385,421)
Bond Amortization	Balance			59,013,826	50,116,789	40,863,871	31,240,836	21,232,880
	Principal			8,897,037	9,252,918	9,623,035	10,007,956	10,408,275
	Interest			2,360,553	2,004,672	1,634,555	1,249,633	849,315
	Payment			11,257,590	11,257,590	11,257,590	11,257,590	11,257,590

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	**Data High**							
		Subscription		3,911,925	3,911,925	3,911,925	3,911,925	3,911,925
		NRC		-	-	-	-	-
	Data Low							
		Subscription		27,896,272	27,896,272	27,896,272	27,896,272	27,896,272
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			47,241	47,241	47,241	47,241	47,241
	Customer Operations, Advertising, G&A			5,251,149	5,263,670	5,276,190	5,288,711	5,301,231
	Network operating expenses			7,874,551	7,912,009	7,949,467	7,986,925	8,024,383
	TOTAL			**13,172,941**	**13,222,920**	**13,272,898**	**13,322,877**	**13,372,855**
EBITDA				**18,635,256**	**18,585,278**	**18,535,299**	**18,485,321**	**18,435,343**
Tax Depreciation				7,381,682	7,556,501	7,684,772	7,763,959	7,848,519
EBIT				**11,253,574**	**11,028,777**	**10,850,527**	**10,721,362**	**10,586,823**
Interest				432,984	-	-	-	-
Income				**10,820,590**	**11,028,777**	**10,850,527**	**10,721,362**	**10,586,823**
Tax				97,385	99,259	97,655	96,492	95,281
Net Income				**10,723,205**	**10,929,518**	**10,752,872**	**10,624,869**	**10,491,542**

Unit	Item			Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment			-	-	-	-	-
	Success Based			714,863	714,863	714,863	714,863	714,863
	Network Capital Replacment			7,381,695	7,350,654	7,330,319	7,327,648	7,346,738
	TOTAL			**8,096,558**	**8,065,517**	**8,045,182**	**8,042,511**	**8,061,601**
Free Cash Flow	Raw			(816,277)	10,420,502	10,392,463	10,346,318	10,278,460
	PV			(379,916)	4,663,427	4,471,999	4,280,906	4,089,259
Bond Amortization	Balance			10,824,605	-	-	-	-
	Principal			10,824,605	-	-	-	-
	Interest			432,984	-	-	-	-
	Payment			11,257,590	-	-	-	-

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	Data High							
		Subscription		3,911,925	3,911,925	3,911,925	3,911,925	3,911,925
		NRC		-	-	-	-	-
	Data Low							
		Subscription		27,896,272	27,896,272	27,896,272	27,896,272	27,896,272
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			47,241	47,241	47,241	47,241	47,241
	Customer Operations, Advertising, G&A			5,313,752	5,326,272	5,338,793	5,351,313	5,363,834
	Network operating expenses			8,061,841	8,099,299	8,136,757	8,174,215	8,211,673
	TOTAL			**13,422,834**	**13,472,812**	**13,522,790**	**13,572,769**	**13,622,747**
EBITDA				**18,385,364**	**18,335,386**	**18,285,407**	**18,235,429**	**18,185,450**
Tax Depreciation				7,924,194	7,974,220	8,023,041	8,075,062	8,131,593
EBIT				**10,461,170**	**10,361,166**	**10,262,366**	**10,160,367**	**10,053,857**
Interest				-	-	-	-	-
Income				**10,461,170**	**10,361,166**	**10,262,366**	**10,160,367**	**10,053,857**
Tax				94,151	93,250	92,361	91,443	90,485
Net Income				**10,367,019**	**10,267,915**	**10,170,005**	**10,068,924**	**9,963,372**

Unit	Item			Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment			-	-	-	-	-
	Success Based			714,863	714,863	714,863	714,863	714,863
	Network Capital Replacment			7,388,761	7,452,238	7,533,597	7,627,914	7,729,702
	TOTAL			**8,103,624**	**8,167,100**	**8,248,460**	**8,342,777**	**8,444,564**
Free Cash Flow	Raw			10,187,589	10,075,035	9,944,586	9,801,209	9,650,401
	PV			3,897,217	3,705,923	3,517,250	3,333,211	3,155,696
Bond Amortization	Balance			-	-	-	-	-
	Principal			-	-	-	-	-
	Interest			-	-	-	-	-
	Payment			-	-	-	-	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 30
Revenues	Data High			
		Subscription		3,911,925
		NRC		-
	Data Low			
		Subscription		27,896,272
		NRC		-
	Voice			
		Subscription		-
		NRC		-
Operational Costs	Voice expenses			-
	Customer Acquisition			
		Data High		-
		Data Low		-
		TOTAL		-
	Service Install			47,241
	Customer Operations, Advertising, G&A			5,376,354
	Network operating expenses			8,249,131
	TOTAL			**13,672,726**
EBITDA				**18,135,472**
Tax Depreciation				8,193,139
EBIT				**9,942,332**
Interest				-
Income				**9,942,332**
Tax				89,481
Net Income				**9,852,851**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			714,863
	Network Capital Replacment			7,833,631
	TOTAL			**8,548,494**
Free Cash Flow	Raw			9,497,497
	PV			2,986,246
Bond Amortization	Balance			-
	Principal			-
	Interest			-
	Payment			-

TILSON

C.1.4 Dark Fiber

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	5,397	14,029	18,201	19,738
			Bus	-	768	2,688	4,095	4,479
			Total	-	6,165	16,716	22,296	24,217
	Data High							
		Average	Res	-	4,642	12,066	15,654	16,977
			Bus	-	691	2,419	3,686	4,031
			Total	-	5,333	14,485	19,339	21,008
	Data Low							
		Average	Res	-	5,397	14,029	18,201	19,738
			Bus	-	768	2,688	4,095	4,479
			Total	-	6,165	16,716	22,296	24,217
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	5	5	5	5
			Bus	-	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	-	23	23	23	23
			Bus	-	23	23	23	23
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	20,963	22,213	23,819	24,902	25,004
			Bus	4,735	4,991	5,119	5,119	5,119
			Total	25,698	27,204	28,939	30,021	30,123
	Data High							
		Average	Res	18,031	19,105	20,481	21,396	21,472
			Bus	4,262	4,492	4,607	4,607	4,607
			Total	22,293	23,597	25,088	26,003	26,080
	Data Low							
		Average	Res	20,963	22,213	23,819	24,902	25,004
			Bus	4,735	4,991	5,119	5,119	5,119
			Total	25,698	27,204	28,939	30,021	30,123
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	23	23	23	23	23
			Bus	23	23	23	23	23
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	25,004	25,004	25,004	25,004	25,004
			Bus	5,119	5,119	5,119	5,119	5,119
			Total	30,123	30,123	30,123	30,123	30,123
	Data High							
		Average	Res	21,472	21,472	21,472	21,472	21,472
			Bus	4,607	4,607	4,607	4,607	4,607
			Total	26,080	26,080	26,080	26,080	26,080
	Data Low							
		Average	Res	25,004	25,004	25,004	25,004	25,004
			Bus	5,119	5,119	5,119	5,119	5,119
			Total	30,123	30,123	30,123	30,123	30,123
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	23	23	23	23	23
			Bus	23	23	23	23	23
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	**Total Customers**							
		Average	Res	25,004	25,004	25,004	25,004	25,004
			Bus	5,119	5,119	5,119	5,119	5,119
			Total	30,123	30,123	30,123	30,123	30,123
	Data High							
		Average	Res	21,472	21,472	21,472	21,472	21,472
			Bus	4,607	4,607	4,607	4,607	4,607
			Total	26,080	26,080	26,080	26,080	26,080
	Data Low							
		Average	Res	25,004	25,004	25,004	25,004	25,004
			Bus	5,119	5,119	5,119	5,119	5,119
			Total	30,123	30,123	30,123	30,123	30,123
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	23	23	23	23	23
			Bus	23	23	23	23	23
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

TILSON

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	25,004	25,004	25,004	25,004	25,004
			Bus	5,119	5,119	5,119	5,119	5,119
			Total	30,123	30,123	30,123	30,123	30,123
	Data High							
		Average	Res	21,472	21,472	21,472	21,472	21,472
			Bus	4,607	4,607	4,607	4,607	4,607
			Total	26,080	26,080	26,080	26,080	26,080
	Data Low							
		Average	Res	25,004	25,004	25,004	25,004	25,004
			Bus	5,119	5,119	5,119	5,119	5,119
			Total	30,123	30,123	30,123	30,123	30,123
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	23	23	23	23	23
			Bus	23	23	23	23	23
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	**Total Customers**							
		Average	Res	25,004	25,004	25,004	25,004	25,004
			Bus	5,119	5,119	5,119	5,119	5,119
			Total	30,123	30,123	30,123	30,123	30,123
	Data High							
		Average	Res	21,472	21,472	21,472	21,472	21,472
			Bus	4,607	4,607	4,607	4,607	4,607
			Total	26,080	26,080	26,080	26,080	26,080
	Data Low							
		Average	Res	25,004	25,004	25,004	25,004	25,004
			Bus	5,119	5,119	5,119	5,119	5,119
			Total	30,123	30,123	30,123	30,123	30,123
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	23	23	23	23	23
			Bus	23	23	23	23	23
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	Total Customers			
		Average	Res	25,004
			Bus	5,119
			Total	30,123
	Data High			
		Average	Res	21,472
			Bus	4,607
			Total	26,080
	Data Low			
		Average	Res	25,004
			Bus	5,119
			Total	30,123
	Voice			
		Average	Res	-
			Bus	-
			Total	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	Data High			
		Data High	Res	5
			Bus	5
		NRC	Res	-
			Bus	-
	Data Low			
		Data Low	Res	23
			Bus	23
		NRC	Res	-
			Bus	-
	Voice			
		Voice	Res	-
			Bus	-
		NRC	Res	-
			Bus	-

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	**Data High**							
		Subscription		-	319,986	869,103	1,160,368	1,260,480
		NRC		-	-	-	-	-
	Data Low							
		Subscription		-	1,712,506	4,643,473	6,193,497	6,727,205
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			-	-	-	-	-
	Customer Operations, Advertising, G&A			-	246,710	371,995	438,252	461,065
	Network operating expenses			-	2,250,426	2,250,426	2,250,426	2,250,426
	TOTAL			**-**	**2,497,137**	**2,622,422**	**2,688,678**	**2,711,491**
EBITDA				**-**	**(464,644)**	**2,890,154**	**4,665,186**	**5,276,194**
Tax Depreciation				-	6,191,587	10,350,895	7,090,775	5,124,278
EBIT				**-**	**(6,656,231)**	**(7,460,740)**	**(2,425,588)**	**151,916**
Interest				-	1,981,308	1,981,308	1,981,308	1,981,308
Income				**-**	**(8,637,539)**	**(9,442,048)**	**(4,406,896)**	**(1,829,392)**
Tax				-	(77,738)	(84,978)	(39,662)	(16,465)
Net Income				**-**	**(8,559,801)**	**(9,357,070)**	**(4,367,234)**	**(1,812,927)**

Unit	Item			Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment			49,532,695	-	-	-	-
	Success Based			-	-	-	-	-
	Network Capital Replacment			-	582,885	777,317	976,135	1,176,369
	TOTAL			**49,532,695**	**582,885**	**777,317**	**976,135**	**1,176,369**
Free Cash Flow	Raw			-	(2,951,100)	216,508	1,747,405	44,775
	PV			-	(2,893,791)	204,138	1,584,201	39,032
Bond Amortization	Balance				49,532,695	49,532,695	49,532,695	49,532,695
	Principal				-	-	-	2,090,207
	Interest				1,981,308	1,981,308	1,981,308	1,981,308
	Payment				1,981,308	1,981,308	1,981,308	4,071,514

Financials

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	Data High							
		Subscription		1,337,577	1,415,816	1,505,288	1,560,205	1,564,770
		NRC		-	-	-	-	-
	Data Low							
		Subscription		7,138,543	7,556,925	8,038,702	8,339,465	8,367,643
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			-	-	-	-	-
	Customer Operations, Advertising, G&A			478,648	496,532	517,125	529,982	531,186
	Network operating expenses			2,250,426	2,250,426	2,250,426	2,250,426	2,250,426
	TOTAL			**2,729,074**	**2,746,958**	**2,767,552**	**2,780,408**	**2,781,612**
EBITDA				**5,747,046**	**6,225,783**	**6,776,438**	**7,119,263**	**7,150,801**
Tax Depreciation				5,082,853	3,649,328	2,306,078	2,462,986	2,624,027
EBIT				**664,193**	**2,576,455**	**4,470,360**	**4,656,277**	**4,526,773**
Interest				1,897,700	1,810,747	1,720,316	1,626,268	1,528,458
Income				**(1,233,507)**	**765,708**	**2,750,044**	**3,030,009**	**2,998,315**
Tax				(11,102)	6,891	24,750	27,270	26,985
Net Income				**(1,222,405)**	**758,817**	**2,725,293**	**3,002,739**	**2,971,330**

Unit	Item			Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment			-	-	-	-	-
	Success Based			-	-	-	-	-
	Network Capital Replacment			1,374,686	1,567,495	1,751,083	1,921,791	2,076,213
	TOTAL			**1,374,686**	**1,567,495**	**1,751,083**	**1,921,791**	**2,076,213**
Free Cash Flow	Raw			311,947	579,883	929,091	1,098,687	976,088
	PV			261,475	467,366	720,015	818,698	699,368
Bond Amortization	Balance			47,442,488	45,268,673	43,007,906	40,656,708	38,211,462
	Principal			2,173,815	2,260,767	2,351,198	2,445,246	2,543,056
	Interest			1,897,700	1,810,747	1,720,316	1,626,268	1,528,458
	Payment			4,071,514	4,071,514	4,071,514	4,071,514	4,071,514

Financials

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	Data High							
		Subscription		1,564,770	1,564,770	1,564,770	1,564,770	1,564,770
		NRC		-	-	-	-	-
	Data Low							
		Subscription		8,367,643	8,367,643	8,367,643	8,367,643	8,367,643
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			-	-	-	-	-
	Customer Operations, Advertising, G&A			531,186	531,186	531,186	531,186	531,186
	Network operating expenses			2,250,426	2,250,426	2,250,426	2,250,426	2,250,426
	TOTAL			**2,781,612**	**2,781,612**	**2,781,612**	**2,781,612**	**2,781,612**
EBITDA				**7,150,801**	**7,150,801**	**7,150,801**	**7,150,801**	**7,150,801**
Tax Depreciation				2,779,401	2,936,536	3,083,243	3,224,798	3,357,007
EBIT				**4,371,400**	**4,214,264**	**4,067,558**	**3,926,002**	**3,793,794**
Interest				1,426,736	1,320,945	1,210,922	1,096,499	977,498
Income				**2,944,663**	**2,893,319**	**2,856,636**	**2,829,504**	**2,816,296**
Tax				26,502	26,040	25,710	25,466	25,347
Net Income				**2,918,161**	**2,867,279**	**2,830,926**	**2,804,038**	**2,790,949**

Unit	Item			Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment			-	-	-	-	-
	Success Based			-	-	-	-	-
	Network Capital Replacment			2,211,406	2,325,103	2,415,910	2,483,448	2,528,444
	TOTAL			**2,211,406**	**2,325,103**	**2,415,910**	**2,483,448**	**2,528,444**
Free Cash Flow	Raw			841,379	728,143	637,666	570,372	525,495
	PV			579,662	482,355	406,172	349,335	309,470
Bond Amortization	Balance			35,668,406	33,023,628	30,273,059	27,412,467	24,437,451
	Principal			2,644,778	2,750,569	2,860,592	2,975,016	3,094,016
	Interest			1,426,736	1,320,945	1,210,922	1,096,499	977,498
	Payment			4,071,514	4,071,514	4,071,514	4,071,514	4,071,514

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	Data High							
		Subscription		1,564,770	1,564,770	1,564,770	1,564,770	1,564,770
		NRC		-	-	-	-	-
	Data Low							
		Subscription		8,367,643	8,367,643	8,367,643	8,367,643	8,367,643
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			-	-	-	-	-
	Customer Operations, Advertising, G&A			531,186	531,186	531,186	531,186	531,186
	Network operating expenses			2,250,426	2,250,426	2,250,426	2,250,426	2,250,426
	TOTAL			**2,781,612**	**2,781,612**	**2,781,612**	**2,781,612**	**2,781,612**
EBITDA				**7,150,801**	**7,150,801**	**7,150,801**	**7,150,801**	**7,150,801**
Tax Depreciation				3,478,613	2,863,290	2,218,215	2,286,513	2,339,560
EBIT				**3,672,188**	**4,287,511**	**4,932,586**	**4,864,288**	**4,811,241**
Interest				853,737	725,026	591,167	451,953	307,170
Income				**2,818,450**	**3,562,484**	**4,341,419**	**4,412,335**	**4,504,070**
Tax				25,366	32,062	39,073	39,711	40,537
Net Income				**2,793,084**	**3,530,422**	**4,302,346**	**4,372,624**	**4,463,534**

Unit	Item			Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment			-	-	-	-	-
	Success Based			-	-	-	-	-
	Network Capital Replacment			2,552,732	2,559,162	2,551,413	2,533,716	2,510,518
	TOTAL			**2,552,732**	**2,559,162**	**2,551,413**	**2,533,716**	**2,510,518**
Free Cash Flow	Raw			501,188	488,062	488,801	505,859	528,232
	PV			283,803	265,741	255,907	254,651	255,687
Bond Amortization	Balance			21,343,435	18,125,658	14,779,170	11,298,823	7,679,261
	Principal			3,217,777	3,346,488	3,480,347	3,619,561	3,764,344
	Interest			853,737	725,026	591,167	451,953	307,170
	Payment			4,071,514	4,071,514	4,071,514	4,071,514	4,071,514

Financials

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	Data High							
		Subscription		1,564,770	1,564,770	1,564,770	1,564,770	1,564,770
		NRC		-	-	-	-	-
	Data Low							
		Subscription		8,367,643	8,367,643	8,367,643	8,367,643	8,367,643
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			-	-	-	-	-
	Customer Operations, Advertising, G&A			531,186	531,186	531,186	531,186	531,186
	Network operating expenses			2,250,426	2,250,426	2,250,426	2,250,426	2,250,426
	TOTAL			**2,781,612**	**2,781,612**	**2,781,612**	**2,781,612**	**2,781,612**
EBITDA				**7,150,801**	**7,150,801**	**7,150,801**	**7,150,801**	**7,150,801**
Tax Depreciation				2,379,014	2,406,991	2,425,883	2,438,171	2,446,222
EBIT				**4,771,786**	**4,743,810**	**4,724,917**	**4,712,630**	**4,704,579**
Interest				156,597	-	-	-	-
Income				**4,615,190**	**4,743,810**	**4,724,917**	**4,712,630**	**4,704,579**
Tax				41,537	42,694	42,524	42,414	42,341
Net Income				**4,573,653**	**4,701,116**	**4,682,393**	**4,670,216**	**4,662,238**

Unit	Item			Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment			-	-	-	-	-
	Success Based			-	-	-	-	-
	Network Capital Replacment			2,486,108	2,464,266	2,447,960	2,439,147	2,438,691
	TOTAL			**2,486,108**	**2,464,266**	**2,447,960**	**2,439,147**	**2,438,691**
Free Cash Flow	Raw			551,642	4,643,841	4,660,317	4,669,240	4,669,769
	PV			256,748	2,078,231	2,005,389	1,931,951	1,857,855
Bond Amortization	Balance			3,914,918	(0)	(0)	(0)	(0)
	Principal			3,914,918	-	-	-	-
	Interest			156,597	-	-	-	-
	Payment			4,071,514	-	-	-	-

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	**Data High**							
		Subscription		1,564,770	1,564,770	1,564,770	1,564,770	1,564,770
		NRC		-	-	-	-	-
	Data Low							
		Subscription		8,367,643	8,367,643	8,367,643	8,367,643	8,367,643
		NRC		-	-	-	-	-
	Voice							
		Subscription		-	-	-	-	-
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	-	-	-	-
	Customer Acquisition							
		Data High		-	-	-	-	-
		Data Low		-	-	-	-	-
		TOTAL		-	-	-	-	-
	Service Install			-	-	-	-	-
	Customer Operations, Advertising, G&A			531,186	531,186	531,186	531,186	531,186
	Network operating expenses			2,250,426	2,250,426	2,250,426	2,250,426	2,250,426
	TOTAL			**2,781,612**	**2,781,612**	**2,781,612**	**2,781,612**	**2,781,612**
EBITDA				**7,150,801**	**7,150,801**	**7,150,801**	**7,150,801**	**7,150,801**
Tax Depreciation				2,452,124	2,457,559	2,463,731	2,471,362	2,480,731
EBIT				**4,698,676**	**4,693,242**	**4,687,069**	**4,679,439**	**4,670,069**
Interest				-	-	-	-	-
Income				**4,698,676**	**4,693,242**	**4,687,069**	**4,679,439**	**4,670,069**
Tax				42,288	42,239	42,184	42,115	42,031
Net Income				**4,656,388**	**4,651,002**	**4,644,886**	**4,637,324**	**4,628,039**

Unit	Item			Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment			-	-	-	-	-
	Success Based			-	-	-	-	-
	Network Capital Replacment			2,446,413	2,461,264	2,481,570	2,505,330	2,530,504
	TOTAL			**2,446,413**	**2,461,264**	**2,481,570**	**2,505,330**	**2,530,504**
Free Cash Flow	Raw			4,662,099	4,647,298	4,627,047	4,603,356	4,578,266
	PV			1,783,465	1,709,426	1,636,517	1,565,517	1,497,100
Bond Amortization	Balance			(0)	(0)	(0)	(0)	(0)
	Principal			-	-	-	-	-
	Interest			-	-	-	-	-
	Payment			-	-	-	-	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 30
Revenues	Data High			
		Subscription		1,564,770
		NRC		-
	Data Low			
		Subscription		8,367,643
		NRC		-
	Voice			
		Subscription		-
		NRC		-
Operational Costs	Voice expenses			-
	Customer Acquisition			
		Data High		-
		Data Low		-
		TOTAL		-
	Service Install			-
	Customer Operations, Advertising, G&A			531,186
	Network operating expenses			2,250,426
	TOTAL			**2,781,612**
EBITDA				**7,150,801**
Tax Depreciation				2,491,770
EBIT				**4,659,031**
Interest				-
Income				**4,659,031**
Tax				41,931
Net Income				**4,617,100**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			-
	Network Capital Replacment			2,555,245
	TOTAL			**2,555,245**
Free Cash Flow	Raw			4,553,624
	PV			1,431,771
Bond Amortization	Balance			(0)
	Principal			-
	Interest			-
	Payment			-

TILSON

C.2 Scenarios for Shawnee County Outside City of Topeka

C.2.1 Retail No Structure

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	1,697	4,382	5,637	6,086
			Bus	-	135	472	719	786
			Total	-	1,832	4,853	6,356	6,872
	Data High							
		Average	Res	-	1,606	4,147	5,335	5,759
			Bus	-	121	425	647	708
			Total	-	1,728	4,571	5,982	6,467
	Data Low							
		Average	Res	-	91	235	303	327
			Bus	-	13	47	72	79
			Total	-	104	282	375	405
	Voice							
		Average	Res	-	594	1,534	1,973	2,130
			Bus	-	47	165	252	275
			Total	-	641	1,699	2,225	2,405

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	70	70	70	70
			Bus	-	100	100	100	100
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Voice							
		Voice	Res	-	20	20	20	20
			Bus	-	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	6,528	6,969	7,162	7,176	7,176
			Bus	831	876	899	899	899
			Total	7,359	7,845	8,061	8,074	8,074
	Data High							
		Average	Res	6,177	6,596	6,778	6,790	6,790
			Bus	748	788	809	809	809
			Total	6,925	7,384	7,586	7,599	7,599
	Data Low							
		Average	Res	350	374	385	386	386
			Bus	83	88	90	90	90
			Total	433	461	475	476	476
	Voice							
		Average	Res	2,285	2,439	2,507	2,512	2,512
			Bus	291	307	314	314	314
			Total	2,576	2,746	2,821	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	7,176	7,176	7,176	7,176	7,176
			Bus	899	899	899	899	899
			Total	8,074	8,074	8,074	8,074	8,074
	Data High							
		Average	Res	6,790	6,790	6,790	6,790	6,790
			Bus	809	809	809	809	809
			Total	7,599	7,599	7,599	7,599	7,599
	Data Low							
		Average	Res	386	386	386	386	386
			Bus	90	90	90	90	90
			Total	476	476	476	476	476
	Voice							
		Average	Res	2,512	2,512	2,512	2,512	2,512
			Bus	314	314	314	314	314
			Total	2,826	2,826	2,826	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	**Total Customers**							
		Average	Res	7,176	7,176	7,176	7,176	7,176
			Bus	899	899	899	899	899
			Total	8,074	8,074	8,074	8,074	8,074
	Data High							
		Average	Res	6,790	6,790	6,790	6,790	6,790
			Bus	809	809	809	809	809
			Total	7,599	7,599	7,599	7,599	7,599
	Data Low							
		Average	Res	386	386	386	386	386
			Bus	90	90	90	90	90
			Total	476	476	476	476	476
	Voice							
		Average	Res	2,512	2,512	2,512	2,512	2,512
			Bus	314	314	314	314	314
			Total	2,826	2,826	2,826	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	7,176	7,176	7,176	7,176	7,176
			Bus	899	899	899	899	899
			Total	8,074	8,074	8,074	8,074	8,074
	Data High							
		Average	Res	6,790	6,790	6,790	6,790	6,790
			Bus	809	809	809	809	809
			Total	7,599	7,599	7,599	7,599	7,599
	Data Low							
		Average	Res	386	386	386	386	386
			Bus	90	90	90	90	90
			Total	476	476	476	476	476
	Voice							
		Average	Res	2,512	2,512	2,512	2,512	2,512
			Bus	314	314	314	314	314
			Total	2,826	2,826	2,826	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	**Total Customers**							
		Average	Res	7,176	7,176	7,176	7,176	7,176
			Bus	899	899	899	899	899
			Total	8,074	8,074	8,074	8,074	8,074
	Data High							
		Average	Res	6,790	6,790	6,790	6,790	6,790
			Bus	809	809	809	809	809
			Total	7,599	7,599	7,599	7,599	7,599
	Data Low							
		Average	Res	386	386	386	386	386
			Bus	90	90	90	90	90
			Total	476	476	476	476	476
	Voice							
		Average	Res	2,512	2,512	2,512	2,512	2,512
			Bus	314	314	314	314	314
			Total	2,826	2,826	2,826	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	Total Customers			
		Average	Res	7,176
			Bus	899
			Total	8,074
	Data High			
		Average	Res	6,790
			Bus	809
			Total	7,599
	Data Low			
		Average	Res	386
			Bus	90
			Total	476
	Voice			
		Average	Res	2,512
			Bus	314
			Total	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	Data High			
		Data High	Res	70
			Bus	100
		NRC	Res	150
			Bus	150
	Data Low			
		Data Low	Res	-
			Bus	-
		NRC	Res	150
			Bus	150
	Voice			
		Voice	Res	20
			Bus	20
		NRC	Res	-
			Bus	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	**Data High**							
		Subscription		-	1,494,997	3,992,564	5,257,535	5,686,783
		NRC		-	520,924	341,524	97,489	66,689
	Data Low							
		Subscription		-	-	-	-	-
		NRC		-	31,500	22,412	6,252	4,177
	Voice							
		Subscription		-	153,909	407,682	533,923	577,257
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	1,894	5,017	6,571	7,104
	Customer Acquisition							
		Data High		-	173,641	113,841	32,496	22,230
		Data Low		-	2,100	1,494	417	278
		TOTAL		-	175,741	115,335	32,913	22,508
	Service Install			-	276,212	181,968	51,870	35,433
	Customer Operations, Advertising, G&A			-	1,929,653	2,427,248	2,645,224	2,733,430
	Network operating expenses			-	2,489,056	2,690,945	2,748,406	2,787,587
	TOTAL			**-**	**4,872,556**	**5,420,514**	**5,484,984**	**5,586,063**
EBITDA				**-**	**(2,671,227)**	**(656,333)**	**410,215**	**748,844**
Tax Depreciation				-	5,357,140	9,708,285	7,888,515	6,264,816
EBIT				**-**	**(8,028,367)**	**(10,364,617)**	**(7,478,300)**	**(5,515,972)**
Interest				-	678,983	670,054	565,633	484,409
Income				**-**	**(8,707,350)**	**(11,034,672)**	**(8,043,934)**	**(6,000,381)**
Tax				-	(2,368,399)	(3,001,431)	(2,187,950)	(1,632,104)
Net Income				**-**	**(6,338,951)**	**(8,033,241)**	**(5,855,984)**	**(4,368,277)**

Unit	Item			Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment			42,857,123	-	-	-	-
	Success Based			-	6,019,123	3,964,397	1,128,325	769,379
	Network Capital Replacment			-	504,329	743,389	985,690	1,211,938
	TOTAL			**42,857,123**	**6,523,453**	**4,707,785**	**2,114,015**	**1,981,317**
Free Cash Flow	Raw			(42,857,123)	(6,826,280)	(2,362,687)	484,150	399,630
	PV			(42,857,123)	(6,542,143)	(2,079,764)	391,435	296,763
Bond Amortization	Balance				48,876,247	48,876,247	48,876,247	48,876,247
	Principal				-	-	-	2,062,505
	Interest				1,955,050	1,955,050	1,955,050	1,955,050
	Payment				1,955,050	1,955,050	1,955,050	4,017,555

Financials

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	Data High							
		Subscription		6,086,627	6,486,471	6,663,609	6,673,900	6,673,900
		NRC		91,002	68,065	15,055	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		5,462	4,261	1,120	714	714
	Voice							
		Subscription		618,133	659,008	677,108	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			7,607	8,110	8,333	8,347	8,347
	Customer Acquisition							
		Data High		30,334	22,688	5,018	3,799	3,799
		Data Low		364	284	75	48	48
		TOTAL		30,698	22,972	5,093	3,847	3,847
	Service Install			48,232	36,163	8,087	6,056	6,056
	Customer Operations, Advertising, G&A			2,827,904	2,913,134	2,944,708	2,950,739	2,954,669
	Network operating expenses			2,840,932	2,880,838	2,889,545	2,895,963	2,901,676
	TOTAL			**5,755,373**	**5,861,217**	**5,855,766**	**5,864,952**	**5,874,594**
EBITDA				**1,045,851**	**1,356,588**	**1,501,126**	**1,499,311**	**1,489,669**
Tax Depreciation				5,920,002	4,638,529	3,389,272	3,233,810	3,188,358
EBIT				**(4,874,151)**	**(3,281,941)**	**(1,888,146)**	**(1,734,499)**	**(1,698,689)**
Interest				432,433	384,689	349,154	332,961	321,274
Income				**(5,306,584)**	**(3,666,630)**	**(2,237,300)**	**(2,067,460)**	**(2,019,963)**
Tax				(1,443,391)	(997,323)	(608,546)	(562,349)	(549,430)
Net Income				**(3,863,193)**	**(2,669,306)**	**(1,628,755)**	**(1,505,111)**	**(1,470,533)**

Unit	Item			Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment			-	-	-	-	-
	Success Based			1,047,503	783,606	170,978	126,034	112,177
	Network Capital Replacment			1,437,255	1,664,079	1,883,210	2,085,573	2,271,627
	TOTAL			**2,484,758**	**2,447,686**	**2,054,187**	**2,211,607**	**2,383,805**
Free Cash Flow	Raw			4,484	(93,774)	55,484	(149,947)	(344,706)
	PV			3,058	(58,746)	31,925	(79,246)	(167,324)
Bond Amortization	Balance			46,813,741	44,668,736	42,437,930	40,117,892	37,705,052
	Principal			2,145,006	2,230,806	2,320,038	2,412,840	2,509,353
	Interest			1,872,550	1,786,749	1,697,517	1,604,716	1,508,202
	Payment			4,017,555	4,017,555	4,017,555	4,017,555	4,017,555

Financials

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	Data High							
		Subscription		6,673,900	6,673,900	6,673,900	6,673,900	6,673,900
		NRC		11,398	11,398	11,398	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		714	714	714	714	714
	Voice							
		Subscription		678,252	678,252	678,252	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			8,347	8,347	8,347	8,347	8,347
	Customer Acquisition							
		Data High		3,799	3,799	3,799	3,799	3,799
		Data Low		48	48	48	48	48
		TOTAL		3,847	3,847	3,847	3,847	3,847
	Service Install			6,056	6,056	6,056	6,056	6,056
	Customer Operations, Advertising, G&A			2,959,292	2,963,914	2,968,537	2,973,160	2,977,783
	Network operating expenses			2,908,397	2,915,118	2,921,838	2,928,559	2,935,280
	TOTAL			**5,885,938**	**5,897,281**	**5,908,625**	**5,919,969**	**5,931,313**
EBITDA				**1,478,325**	**1,466,981**	**1,455,637**	**1,444,294**	**1,432,950**
Tax Depreciation				3,283,420	3,413,720	3,542,254	3,692,630	3,853,120
EBIT				**(1,805,095)**	**(1,946,739)**	**(2,086,617)**	**(2,248,336)**	**(2,420,170)**
Interest				312,772	304,947	296,981	288,551	279,013
Income				**(2,117,867)**	**(2,251,686)**	**(2,383,598)**	**(2,536,888)**	**(2,699,183)**
Tax				(576,060)	(612,459)	(648,339)	(690,033)	(734,178)
Net Income				**(1,541,807)**	**(1,639,227)**	**(1,735,259)**	**(1,846,854)**	**(1,965,005)**

Unit	Item			Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment			-	-	-	-	-
	Success Based			131,973	131,973	131,973	131,973	131,973
	Network Capital Replacment			2,438,067	2,582,375	2,702,398	2,797,185	2,866,956
	TOTAL			**2,570,040**	**2,714,348**	**2,834,371**	**2,929,159**	**2,998,929**
Free Cash Flow	Raw			(515,656)	(634,909)	(730,395)	(794,831)	(831,802)
	PV			(229,902)	(259,995)	(274,716)	(274,583)	(263,930)
Bond Amortization	Balance			35,195,699	32,585,972	29,871,855	27,049,174	24,113,586
	Principal			2,609,727	2,714,116	2,822,681	2,935,588	3,053,012
	Interest			1,407,828	1,303,439	1,194,874	1,081,967	964,543
	Payment			4,017,555	4,017,555	4,017,555	4,017,555	4,017,555

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	**Data High**							
		Subscription		6,673,900	6,673,900	6,673,900	6,673,900	6,673,900
		NRC		11,398	11,398	11,398	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		714	714	714	714	714
	Voice							
		Subscription		678,252	678,252	678,252	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			8,347	8,347	8,347	8,347	8,347
	Customer Acquisition							
		Data High		3,799	3,799	3,799	3,799	3,799
		Data Low		48	48	48	48	48
		TOTAL		3,847	3,847	3,847	3,847	3,847
	Service Install			6,056	6,056	6,056	6,056	6,056
	Customer Operations, Advertising, G&A			2,982,406	2,987,029	2,991,652	2,996,275	3,000,898
	Network operating expenses			2,942,001	2,948,722	2,955,443	2,962,163	2,968,884
	TOTAL			**5,942,656**	**5,954,000**	**5,965,344**	**5,976,688**	**5,988,031**
EBITDA				**1,421,606**	**1,410,263**	**1,398,919**	**1,387,575**	**1,376,231**
Tax Depreciation				4,004,768	3,516,652	2,911,719	2,861,179	2,848,407
EBIT				**(2,583,162)**	**(2,106,390)**	**(1,512,800)**	**(1,473,604)**	**(1,472,176)**
Interest				267,903	255,053	249,022	251,234	253,929
Income				**(2,851,064)**	**(2,361,443)**	**(1,761,822)**	**(1,724,837)**	**(1,726,105)**
Tax				(775,490)	(642,312)	(479,216)	(469,156)	(469,500)
Net Income				**(2,075,575)**	**(1,719,130)**	**(1,282,606)**	**(1,255,682)**	**(1,256,604)**

Unit	Item			Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment			-	-	-	-	-
	Success Based			131,973	131,973	131,973	131,973	131,973
	Network Capital Replacment			2,913,136	2,938,304	2,946,029	2,940,614	2,925,203
	TOTAL			**3,045,109**	**3,070,277**	**3,078,002**	**3,072,587**	**3,057,176**
Free Cash Flow	Raw			(848,013)	(1,017,702)	(1,199,868)	(1,215,856)	(1,211,444)
	PV			(247,141)	(272,417)	(294,998)	(274,561)	(251,265)
Bond Amortization	Balance			21,060,574	17,885,442	14,583,305	11,149,082	7,577,490
	Principal			3,175,132	3,302,138	3,434,223	3,571,592	3,714,456
	Interest			842,423	715,418	583,332	445,963	303,100
	Payment			4,017,555	4,017,555	4,017,555	4,017,555	4,017,555

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	Data High							
		Subscription		6,673,900	6,673,900	6,673,900	6,673,900	6,673,900
		NRC		11,398	11,398	11,398	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		714	714	714	714	714
	Voice							
		Subscription		678,252	678,252	678,252	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			8,347	8,347	8,347	8,347	8,347
	Customer Acquisition							
		Data High		3,799	3,799	3,799	3,799	3,799
		Data Low		48	48	48	48	48
		TOTAL		3,847	3,847	3,847	3,847	3,847
	Service Install			6,056	6,056	6,056	6,056	6,056
	Customer Operations, Advertising, G&A			3,005,521	3,010,143	3,014,766	3,019,389	3,024,012
	Network operating expenses			2,975,605	2,982,326	2,989,047	2,995,767	3,002,488
	TOTAL			**5,999,375**	**6,010,719**	**6,022,062**	**6,033,406**	**6,044,750**
EBITDA				**1,364,888**	**1,353,544**	**1,342,200**	**1,330,857**	**1,319,513**
Tax Depreciation				2,872,409	2,903,761	2,920,089	2,935,405	2,958,075
EBIT				**(1,507,522)**	**(1,550,217)**	**(1,577,889)**	**(1,604,548)**	**(1,638,563)**
Interest				256,550	258,601	260,037	261,159	262,097
Income				**(1,764,072)**	**(1,808,818)**	**(1,837,926)**	**(1,865,708)**	**(1,900,659)**
Tax				(479,828)	(491,999)	(499,916)	(507,473)	(516,979)
Net Income				**(1,284,244)**	**(1,316,820)**	**(1,338,010)**	**(1,358,235)**	**(1,383,680)**

Unit	Item			Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment			-	-	-	-	-
	Success Based			131,973	131,973	131,973	131,973	131,973
	Network Capital Replacment			2,907,091	2,889,565	2,876,238	2,869,744	2,871,594
	TOTAL			**3,039,065**	**3,021,538**	**3,008,211**	**3,001,717**	**3,003,567**
Free Cash Flow	Raw			(1,194,349)	(1,175,995)	(1,166,095)	(1,163,388)	(1,167,075)
	PV			(227,527)	(205,768)	(187,404)	(171,728)	(158,229)
Bond Amortization	Balance			3,863,034	(0)	(0)	(0)	(0)
	Principal			3,863,034	-	-	-	-
	Interest			154,521	-	-	-	-
	Payment			4,017,555	-	-	-	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	Data High							
		Subscription		6,673,900	6,673,900	6,673,900	6,673,900	6,673,900
		NRC		11,398	11,398	11,398	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		714	714	714	714	714
	Voice							
		Subscription		678,252	678,252	678,252	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			8,347	8,347	8,347	8,347	8,347
	Customer Acquisition							
		Data High		3,799	3,799	3,799	3,799	3,799
		Data Low		48	48	48	48	48
		TOTAL		3,847	3,847	3,847	3,847	3,847
	Service Install			6,056	6,056	6,056	6,056	6,056
	Customer Operations, Advertising, G&A			3,028,635	3,033,258	3,037,881	3,042,504	3,047,127
	Network operating expenses			3,009,209	3,015,930	3,022,651	3,029,372	3,036,092
	TOTAL			**6,056,094**	**6,067,437**	**6,078,781**	**6,090,125**	**6,101,469**
EBITDA				**1,308,169**	**1,296,825**	**1,285,482**	**1,274,138**	**1,262,794**
Tax Depreciation				2,977,731	2,991,690	3,005,287	3,019,888	3,036,036
EBIT				**(1,669,561)**	**(1,694,865)**	**(1,719,805)**	**(1,745,750)**	**(1,773,242)**
Interest				262,868	263,625	264,539	265,680	267,072
Income				**(1,932,429)**	**(1,958,490)**	**(1,984,344)**	**(2,011,430)**	**(2,040,315)**
Tax				(525,621)	(532,709)	(539,742)	(547,109)	(554,966)
Net Income				**(1,406,808)**	**(1,425,781)**	**(1,444,603)**	**(1,464,321)**	**(1,485,349)**

Unit	Item			Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment			-	-	-	-	-
	Success Based			131,973	131,973	131,973	131,973	131,973
	Network Capital Replacment			2,882,167	2,900,837	2,926,194	2,956,333	2,989,155
	TOTAL			**3,014,140**	**3,032,810**	**3,058,167**	**3,088,307**	**3,121,128**
Free Cash Flow	Raw			(1,180,350)	(1,203,275)	(1,232,944)	(1,267,060)	(1,303,368)
	PV			(146,984)	(137,625)	(129,523)	(122,257)	(115,509)
Bond Amortization	Balance			(0)	(0)	(0)	(0)	(0)
	Principal			-	-	-	-	-
	Interest			-	-	-	-	-
	Payment			-	-	-	-	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 30
Revenues	Data High			
		Subscription		6,673,900
		NRC		11,398
	Data Low			
		Subscription		-
		NRC		714
	Voice			
		Subscription		678,252
		NRC		-
Operational Costs	Voice expenses			8,347
	Customer Acquisition			
		Data High		3,799
		Data Low		48
		TOTAL		3,847
	Service Install			6,056
	Customer Operations, Advertising, G&A			3,051,750
	Network operating expenses			3,042,813
	TOTAL			**6,112,812**
EBITDA				**1,251,450**
Tax Depreciation				3,053,915
EBIT				**(1,802,465)**
Interest				268,703
Income				**(2,071,167)**
Tax				(563,358)
Net Income				**(1,507,810)**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			131,973
	Network Capital Replacment			3,022,633
	TOTAL			**3,154,606**
Free Cash Flow	Raw			(1,339,798)
	PV			(109,058)
Bond Amortization	Balance			(0)
	Principal			-
	Interest			-
	Payment			-

TILSON

C.2.2 Retail With Structure

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	1,697	4,382	5,637	6,086
			Bus	-	135	472	719	786
			Total	-	1,832	4,853	6,356	6,872
	Data High							
		Average	Res	-	1,606	4,147	5,335	5,759
			Bus	-	121	425	647	708
			Total	-	1,728	4,571	5,982	6,467
	Data Low							
		Average	Res	-	91	235	303	327
			Bus	-	13	47	72	79
			Total	-	104	282	375	405
	Voice							
		Average	Res	-	594	1,534	1,973	2,130
			Bus	-	47	165	252	275
			Total	-	641	1,699	2,225	2,405

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	70	70	70	70
			Bus	-	100	100	100	100
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Voice							
		Voice	Res	-	20	20	20	20
			Bus	-	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	6,528	6,969	7,162	7,176	7,176
			Bus	831	876	899	899	899
			Total	7,359	7,845	8,061	8,074	8,074
	Data High							
		Average	Res	6,177	6,596	6,778	6,790	6,790
			Bus	748	788	809	809	809
			Total	6,925	7,384	7,586	7,599	7,599
	Data Low							
		Average	Res	350	374	385	386	386
			Bus	83	88	90	90	90
			Total	433	461	475	476	476
	Voice							
		Average	Res	2,285	2,439	2,507	2,512	2,512
			Bus	291	307	314	314	314
			Total	2,576	2,746	2,821	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	7,176	7,176	7,176	7,176	7,176
			Bus	899	899	899	899	899
			Total	8,074	8,074	8,074	8,074	8,074
	Data High							
		Average	Res	6,790	6,790	6,790	6,790	6,790
			Bus	809	809	809	809	809
			Total	7,599	7,599	7,599	7,599	7,599
	Data Low							
		Average	Res	386	386	386	386	386
			Bus	90	90	90	90	90
			Total	476	476	476	476	476
	Voice							
		Average	Res	2,512	2,512	2,512	2,512	2,512
			Bus	314	314	314	314	314
			Total	2,826	2,826	2,826	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	**Total Customers**							
		Average	Res	7,176	7,176	7,176	7,176	7,176
			Bus	899	899	899	899	899
			Total	8,074	8,074	8,074	8,074	8,074
	Data High							
		Average	Res	6,790	6,790	6,790	6,790	6,790
			Bus	809	809	809	809	809
			Total	7,599	7,599	7,599	7,599	7,599
	Data Low							
		Average	Res	386	386	386	386	386
			Bus	90	90	90	90	90
			Total	476	476	476	476	476
	Voice							
		Average	Res	2,512	2,512	2,512	2,512	2,512
			Bus	314	314	314	314	314
			Total	2,826	2,826	2,826	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	7,176	7,176	7,176	7,176	7,176
			Bus	899	899	899	899	899
			Total	8,074	8,074	8,074	8,074	8,074
	Data High							
		Average	Res	6,790	6,790	6,790	6,790	6,790
			Bus	809	809	809	809	809
			Total	7,599	7,599	7,599	7,599	7,599
	Data Low							
		Average	Res	386	386	386	386	386
			Bus	90	90	90	90	90
			Total	476	476	476	476	476
	Voice							
		Average	Res	2,512	2,512	2,512	2,512	2,512
			Bus	314	314	314	314	314
			Total	2,826	2,826	2,826	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	**Total Customers**							
		Average	Res	7,176	7,176	7,176	7,176	7,176
			Bus	899	899	899	899	899
			Total	8,074	8,074	8,074	8,074	8,074
	Data High							
		Average	Res	6,790	6,790	6,790	6,790	6,790
			Bus	809	809	809	809	809
			Total	7,599	7,599	7,599	7,599	7,599
	Data Low							
		Average	Res	386	386	386	386	386
			Bus	90	90	90	90	90
			Total	476	476	476	476	476
	Voice							
		Average	Res	2,512	2,512	2,512	2,512	2,512
			Bus	314	314	314	314	314
			Total	2,826	2,826	2,826	2,826	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	Total Customers			
		Average	Res	7,176
			Bus	899
			Total	8,074
	Data High			
		Average	Res	6,790
			Bus	809
			Total	7,599
	Data Low			
		Average	Res	386
			Bus	90
			Total	476
	Voice			
		Average	Res	2,512
			Bus	314
			Total	2,826

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	Data High			
		Data High	Res	70
			Bus	100
		NRC	Res	150
			Bus	150
	Data Low			
		Data Low	Res	-
			Bus	-
		NRC	Res	150
			Bus	150
	Voice			
		Voice	Res	20
			Bus	20
		NRC	Res	-
			Bus	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	**Data High**							
		Subscription		-	1,494,997	3,992,564	5,257,535	5,686,783
		NRC		-	520,924	341,524	97,489	66,689
	Data Low							
		Subscription		-	-	-	-	-
		NRC		-	31,500	22,412	6,252	4,177
	Voice							
		Subscription		-	153,909	407,682	533,923	577,257
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			-	1,894	5,017	6,571	7,104
	Customer Acquisition							
		Data High		-	173,641	113,841	32,496	22,230
		Data Low		-	2,100	1,494	417	278
		TOTAL		-	175,741	115,335	32,913	22,508
	Service Install			-	276,212	181,968	51,870	35,433
	Customer Operations, Advertising, G&A			-	1,916,218	2,419,942	2,639,661	2,729,057
	Network operating expenses			-	2,472,834	2,683,916	2,743,992	2,784,958
	TOTAL			**-**	**4,842,899**	**5,406,178**	**5,475,008**	**5,579,060**
EBITDA				**-**	**(2,641,569)**	**(641,996)**	**420,191**	**755,847**
Tax Depreciation				-	5,275,994	9,605,831	7,872,963	6,278,468
EBIT				**-**	**(7,917,564)**	**(10,247,827)**	**(7,452,772)**	**(5,522,621)**
Interest				-	1,939,708	1,939,708	1,939,708	1,939,708
Income				**-**	**(9,857,272)**	**(12,187,535)**	**(9,392,480)**	**(7,462,330)**
Tax				-	(118,287)	(146,250)	(112,710)	(89,548)
Net Income				**-**	**(9,738,985)**	**(12,041,285)**	**(9,279,770)**	**(7,372,782)**

Unit	Item			Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment			42,207,954	-	-	-	-
	Success Based			-	6,284,754	4,139,350	1,178,119	803,333
	Network Capital Replacment			-	496,690	736,327	979,125	1,205,087
	TOTAL			**42,207,954**	**6,781,444**	**4,875,677**	**2,157,244**	**2,008,420**
Free Cash Flow	Raw			-	(4,959,681)	(7,311,131)	(3,564,051)	(5,149,054)
	PV			-	(4,863,367)	(6,893,417)	(3,231,176)	(4,488,599)
Bond Amortization	Balance				48,492,708	48,492,708	48,492,708	48,492,708
	Principal				-	-	-	2,046,321
	Interest				1,939,708	1,939,708	1,939,708	1,939,708
	Payment				1,939,708	1,939,708	1,939,708	3,986,029

Financials

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	Data High							
		Subscription		6,086,627	6,486,471	6,663,609	6,673,900	6,673,900
		NRC		91,002	68,065	15,055	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		5,462	4,261	1,120	714	714
	Voice							
		Subscription		618,133	659,008	677,108	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			7,607	8,110	8,333	8,347	8,347
	Customer Acquisition							
		Data High		30,334	22,688	5,018	3,799	3,799
		Data Low		364	284	75	48	48
		TOTAL		30,698	22,972	5,093	3,847	3,847
	Service Install			48,232	36,163	8,087	6,056	6,056
	Customer Operations, Advertising, G&A			2,825,150	2,911,591	2,943,430	2,949,656	2,953,759
	Network operating expenses			2,840,731	2,882,454	2,891,557	2,898,268	2,904,241
	TOTAL			**5,752,419**	**5,861,291**	**5,856,500**	**5,866,173**	**5,876,249**
EBITDA				**1,048,805**	**1,356,514**	**1,500,391**	**1,498,089**	**1,488,014**
Tax Depreciation				5,920,561	4,656,061	3,420,567	3,250,196	3,194,479
EBIT				**(4,871,756)**	**(3,299,546)**	**(1,920,176)**	**(1,752,107)**	**(1,706,465)**
Interest				1,857,855	1,772,729	1,684,197	1,592,123	1,496,367
Income				**(6,729,611)**	**(5,072,275)**	**(3,604,372)**	**(3,344,230)**	**(3,202,832)**
Tax				(80,755)	(60,867)	(43,252)	(40,131)	(38,434)
Net Income				**(6,648,856)**	**(5,011,407)**	**(3,561,120)**	**(3,304,099)**	**(3,164,398)**

Unit	Item			Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment			-	-	-	-	-
	Success Based			1,093,730	818,188	178,523	131,596	117,128
	Network Capital Replacment			1,430,176	1,657,121	1,876,506	2,079,044	2,265,389
	TOTAL			**2,523,906**	**2,475,309**	**2,055,029**	**2,210,640**	**2,382,517**
Free Cash Flow	Raw			(5,380,375)	(5,043,956)	(4,497,414)	(4,658,449)	(4,842,098)
	PV			(4,509,854)	(4,065,256)	(3,485,348)	(3,471,293)	(3,469,367)
Bond Amortization	Balance			46,446,387	44,318,214	42,104,913	39,803,081	37,409,175
	Principal			2,128,173	2,213,300	2,301,832	2,393,906	2,489,662
	Interest			1,857,855	1,772,729	1,684,197	1,592,123	1,496,367
	Payment			3,986,029	3,986,029	3,986,029	3,986,029	3,986,029

Financials

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	Data High							
		Subscription		6,673,900	6,673,900	6,673,900	6,673,900	6,673,900
		NRC		11,398	11,398	11,398	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		714	714	714	714	714
	Voice							
		Subscription		678,252	678,252	678,252	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			8,347	8,347	8,347	8,347	8,347
	Customer Acquisition							
		Data High		3,799	3,799	3,799	3,799	3,799
		Data Low		48	48	48	48	48
		TOTAL		3,847	3,847	3,847	3,847	3,847
	Service Install			6,056	6,056	6,056	6,056	6,056
	Customer Operations, Advertising, G&A			2,958,586	2,963,413	2,968,240	2,973,067	2,977,893
	Network operating expenses			2,911,268	2,918,294	2,925,321	2,932,348	2,939,375
	TOTAL			**5,888,103**	**5,899,957**	**5,911,810**	**5,923,664**	**5,935,518**
EBITDA				**1,476,160**	**1,464,306**	**1,452,452**	**1,440,599**	**1,428,745**
Tax Depreciation				3,285,768	3,413,758	3,540,440	3,690,192	3,850,983
EBIT				**(1,809,608)**	**(1,949,452)**	**(2,087,988)**	**(2,249,594)**	**(2,422,239)**
Interest				1,396,781	1,293,211	1,185,498	1,073,477	956,975
Income				**(3,206,388)**	**(3,242,662)**	**(3,273,486)**	**(3,323,070)**	**(3,379,213)**
Tax				(38,477)	(38,912)	(39,282)	(39,877)	(40,551)
Net Income				**(3,167,912)**	**(3,203,751)**	**(3,234,204)**	**(3,283,193)**	**(3,338,663)**

Unit	Item			Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment			-	-	-	-	-
	Success Based			137,797	137,797	137,797	137,797	137,797
	Network Capital Replacment			2,432,240	2,577,085	2,697,747	2,793,254	2,863,796
	TOTAL			**2,570,038**	**2,714,882**	**2,835,544**	**2,931,051**	**3,001,593**
Free Cash Flow	Raw			(5,041,430)	(5,197,693)	(5,329,839)	(5,436,605)	(5,518,326)
	PV			(3,473,258)	(3,443,187)	(3,394,929)	(3,329,745)	(3,249,805)
Bond Amortization	Balance			34,919,514	32,330,265	29,637,447	26,836,916	23,924,363
	Principal			2,589,248	2,692,818	2,800,531	2,912,552	3,029,054
	Interest			1,396,781	1,293,211	1,185,498	1,073,477	956,975
	Payment			3,986,029	3,986,029	3,986,029	3,986,029	3,986,029

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	Data High							
		Subscription		6,673,900	6,673,900	6,673,900	6,673,900	6,673,900
		NRC		11,398	11,398	11,398	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		714	714	714	714	714
	Voice							
		Subscription		678,252	678,252	678,252	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			8,347	8,347	8,347	8,347	8,347
	Customer Acquisition							
		Data High		3,799	3,799	3,799	3,799	3,799
		Data Low		48	48	48	48	48
		TOTAL		3,847	3,847	3,847	3,847	3,847
	Service Install			6,056	6,056	6,056	6,056	6,056
	Customer Operations, Advertising, G&A			2,982,720	2,987,547	2,992,374	2,997,201	3,002,028
	Network operating expenses			2,946,402	2,953,429	2,960,455	2,967,482	2,974,509
	TOTAL			**5,947,372**	**5,959,225**	**5,971,079**	**5,982,933**	**5,994,787**
EBITDA				**1,416,891**	**1,405,037**	**1,393,184**	**1,381,330**	**1,369,476**
Tax Depreciation				4,003,087	3,524,990	2,926,445	2,870,172	2,854,116
EBIT				**(2,586,196)**	**(2,119,952)**	**(1,533,262)**	**(1,488,842)**	**(1,484,640)**
Interest				835,812	709,804	578,755	442,464	300,721
Income				**(3,422,008)**	**(2,829,756)**	**(2,112,017)**	**(1,931,306)**	**(1,785,361)**
Tax				(41,064)	(33,957)	(25,344)	(23,176)	(21,424)
Net Income				**(3,380,944)**	**(2,795,799)**	**(2,086,672)**	**(1,908,130)**	**(1,763,937)**

Unit	Item			Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment			-	-	-	-	-
	Success Based			137,797	137,797	137,797	137,797	137,797
	Network Capital Replacment			2,910,768	2,936,717	2,945,180	2,940,434	2,925,532
	TOTAL			**3,048,565**	**3,074,514**	**3,082,978**	**3,078,231**	**3,063,329**
Free Cash Flow	Raw			(5,576,639)	(5,621,548)	(5,650,479)	(5,659,754)	(5,658,458)
	PV			(3,157,833)	(3,060,830)	(2,958,252)	(2,849,142)	(2,738,932)
Bond Amortization	Balance			20,895,309	17,745,093	14,468,867	11,061,593	7,518,028
	Principal			3,150,217	3,276,225	3,407,274	3,543,565	3,685,308
	Interest			835,812	709,804	578,755	442,464	300,721
	Payment			3,986,029	3,986,029	3,986,029	3,986,029	3,986,029

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	Data High							
		Subscription		6,673,900	6,673,900	6,673,900	6,673,900	6,673,900
		NRC		11,398	11,398	11,398	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		714	714	714	714	714
	Voice							
		Subscription		678,252	678,252	678,252	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			8,347	8,347	8,347	8,347	8,347
	Customer Acquisition							
		Data High		3,799	3,799	3,799	3,799	3,799
		Data Low		48	48	48	48	48
		TOTAL		3,847	3,847	3,847	3,847	3,847
	Service Install			6,056	6,056	6,056	6,056	6,056
	Customer Operations, Advertising, G&A			3,006,855	3,011,682	3,016,509	3,021,336	3,026,163
	Network operating expenses			2,981,536	2,988,563	2,995,590	3,002,616	3,009,643
	TOTAL			**6,006,640**	**6,018,494**	**6,030,348**	**6,042,201**	**6,054,055**
EBITDA				**1,357,622**	**1,345,769**	**1,333,915**	**1,322,061**	**1,310,207**
Tax Depreciation				2,877,154	2,908,455	2,924,534	2,939,895	2,963,153
EBIT				**(1,519,531)**	**(1,562,686)**	**(1,590,619)**	**(1,617,834)**	**(1,652,946)**
Interest				153,309	-	-	-	-
Income				**(1,672,840)**	**(1,562,686)**	**(1,590,619)**	**(1,617,834)**	**(1,652,946)**
Tax				(20,074)	(18,752)	(19,087)	(19,414)	(19,835)
Net Income				**(1,652,766)**	**(1,543,934)**	**(1,571,532)**	**(1,598,420)**	**(1,633,111)**

Unit	Item			Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment			-	-	-	-	-
	Success Based			137,797	137,797	137,797	137,797	137,797
	Network Capital Replacment			2,907,874	2,890,694	2,877,615	2,871,287	2,873,241
	TOTAL			**3,045,671**	**3,028,491**	**3,015,412**	**3,009,084**	**3,011,038**
Free Cash Flow	Raw			(5,654,003)	(1,663,970)	(1,662,410)	(1,667,609)	(1,680,996)
	PV			(2,631,516)	(744,667)	(715,354)	(689,992)	(668,780)
Bond Amortization	Balance			3,832,720	(0)	(0)	(0)	(0)
	Principal			3,832,720	-	-	-	-
	Interest			153,309	-	-	-	-
	Payment			3,986,029	-	-	-	-

148

TILSON

Financials

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	Data High							
		Subscription		6,673,900	6,673,900	6,673,900	6,673,900	6,673,900
		NRC		11,398	11,398	11,398	11,398	11,398
	Data Low							
		Subscription		-	-	-	-	-
		NRC		714	714	714	714	714
	Voice							
		Subscription		678,252	678,252	678,252	678,252	678,252
		NRC		-	-	-	-	-
Operational Costs	Voice expenses			8,347	8,347	8,347	8,347	8,347
	Customer Acquisition							
		Data High		3,799	3,799	3,799	3,799	3,799
		Data Low		48	48	48	48	48
		TOTAL		3,847	3,847	3,847	3,847	3,847
	Service Install			6,056	6,056	6,056	6,056	6,056
	Customer Operations, Advertising, G&A			3,030,990	3,035,816	3,040,643	3,045,470	3,050,297
	Network operating expenses			3,016,670	3,023,697	3,030,724	3,037,750	3,044,777
	TOTAL			**6,065,909**	**6,077,763**	**6,089,616**	**6,101,470**	**6,113,324**
EBITDA				**1,298,354**	**1,286,500**	**1,274,646**	**1,262,793**	**1,250,939**
Tax Depreciation				2,983,373	2,997,670	3,011,551	3,026,404	3,042,785
EBIT				**(1,685,019)**	**(1,711,170)**	**(1,736,904)**	**(1,763,611)**	**(1,791,846)**
Interest				-	-	-	-	-
Income				**(1,685,019)**	**(1,711,170)**	**(1,736,904)**	**(1,763,611)**	**(1,791,846)**
Tax				(20,220)	(20,534)	(20,843)	(21,163)	(21,502)
Net Income				**(1,664,799)**	**(1,690,636)**	**(1,716,061)**	**(1,742,448)**	**(1,770,344)**

Unit	Item			Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment			-	-	-	-	-
	Success Based			137,797	137,797	137,797	137,797	137,797
	Network Capital Replacment			2,883,885	2,902,617	2,928,052	2,958,303	2,991,282
	TOTAL			**3,021,682**	**3,040,415**	**3,065,849**	**3,096,100**	**3,129,079**
Free Cash Flow	Raw			(1,703,108)	(1,733,380)	(1,770,360)	(1,812,144)	(1,856,638)
	PV			(651,517)	(637,593)	(626,150)	(616,277)	(607,124)
Bond Amortization	Balance			(0)	(0)	(0)	(0)	(0)
	Principal			-	-	-	-	-
	Interest			-	-	-	-	-
	Payment			-	-	-	-	-

Financials

Unit	Product	Measure	Res/Bus/Total	Year 30
Revenues	Data High			
		Subscription		6,673,900
		NRC		11,398
	Data Low			
		Subscription		-
		NRC		714
	Voice			
		Subscription		678,252
		NRC		-
Operational Costs	Voice expenses			8,347
	Customer Acquisition			
		Data High		3,799
		Data Low		48
		TOTAL		3,847
	Service Install			6,056
	Customer Operations, Advertising, G&A			3,055,124
	Network operating expenses			3,051,804
	TOTAL			**6,125,178**
EBITDA				**1,239,085**
Tax Depreciation				3,060,886
EBIT				**(1,821,801)**
Interest				-
Income				**(1,821,801)**
Tax				(21,862)
Net Income				**(1,799,940)**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			137,797
	Network Capital Replacment			3,024,968
	TOTAL			**3,162,765**
Free Cash Flow	Raw			(1,901,818)
	PV			(597,978)
Bond Amortization	Balance			(0)
	Principal			-
	Interest			-
	Payment			-

TILSON

C.2.3 Open Access

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	19,208	19,208	19,208	19,208
			Bus	-	2,411	2,411	2,411	2,411
			Total	-	21,619	21,619	21,619	21,619
	Data High							
		Average	Res	-	2,011	5,190	6,677	7,208
			Bus	-	155	541	825	902
			Total	-	2,165	5,731	7,501	8,110
	Data Low							
		Average	Res	-	19,208	19,208	19,208	19,208
			Bus	-	2,411	2,411	2,411	2,411
			Total	-	21,619	21,619	21,619	21,619
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	15	15	15	15
			Bus	-	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	-	58	58	58	58
			Bus	-	58	58	58	58
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Data High							
		Average	Res	7,732	8,255	8,482	8,497	8,497
			Bus	953	1,005	1,031	1,031	1,031
			Total	8,685	9,260	9,513	9,528	9,528
	Data Low							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	58	58	58	58	58
			Bus	58	58	58	58	58
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Data High							
		Average	Res	8,497	8,497	8,497	8,497	8,497
			Bus	1,031	1,031	1,031	1,031	1,031
			Total	9,528	9,528	9,528	9,528	9,528
	Data Low							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	58	58	58	58	58
			Bus	58	58	58	58	58
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	Total Customers							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Data High							
		Average	Res	8,497	8,497	8,497	8,497	8,497
			Bus	1,031	1,031	1,031	1,031	1,031
			Total	9,528	9,528	9,528	9,528	9,528
	Data Low							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	Data High							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	58	58	58	58	58
			Bus	58	58	58	58	58
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Data High							
		Average	Res	8,497	8,497	8,497	8,497	8,497
			Bus	1,031	1,031	1,031	1,031	1,031
			Total	9,528	9,528	9,528	9,528	9,528
	Data Low							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	58	58	58	58	58
			Bus	58	58	58	58	58
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	Total Customers							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Data High							
		Average	Res	8,497	8,497	8,497	8,497	8,497
			Bus	1,031	1,031	1,031	1,031	1,031
			Total	9,528	9,528	9,528	9,528	9,528
	Data Low							
		Average	Res	19,208	19,208	19,208	19,208	19,208
			Bus	2,411	2,411	2,411	2,411	2,411
			Total	21,619	21,619	21,619	21,619	21,619
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	Data High							
		Data High	Res	15	15	15	15	15
			Bus	15	15	15	15	15
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	58	58	58	58	58
			Bus	58	58	58	58	58
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	Total Customers			
		Average	Res	19,208
			Bus	2,411
			Total	21,619
	Data High			
		Average	Res	8,497
			Bus	1,031
			Total	9,528
	Data Low			
		Average	Res	19,208
			Bus	2,411
			Total	21,619
	Voice			
		Average	Res	-
			Bus	-
			Total	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	Data High			
		Data High	Res	15
			Bus	15
		NRC	Res	-
			Bus	-
	Data Low			
		Data Low	Res	58
			Bus	58
		NRC	Res	-
			Bus	-
	Voice			
		Voice	Res	-
			Bus	-
		NRC	Res	-
			Bus	-

Financials

Unit	Product	Measure	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	**Data High**						
		Subscription	-	389,757	1,031,565	1,350,248	1,459,757
		NRC	-	-	-	-	-
	Data Low						
		Subscription	-	15,028,504	15,028,504	15,028,504	15,028,504
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		-	16,214	16,214	16,214	16,214
	Customer Operations, Advertising, G&A		-	2,292,683	2,298,420	2,304,128	2,309,807
	Network operating expenses		-	3,987,705	4,004,119	4,020,451	4,036,699
	TOTAL		**-**	**6,296,602**	**6,318,754**	**6,340,793**	**6,362,720**
EBITDA			**-**	**9,121,660**	**9,741,315**	**10,037,959**	**10,125,541**
Tax Depreciation			-	5,749,103	13,809,252	13,643,202	9,675,023
EBIT			**-**	**3,372,556**	**(4,067,937)**	**(3,605,243)**	**450,517**
Interest			-	3,183,101	3,183,101	3,183,101	3,183,101
Income			**-**	**189,455**	**(7,251,037)**	**(6,788,344)**	**(2,732,583)**
Tax			-	1,705	(65,259)	(61,095)	(24,593)
Net Income			**-**	**187,750**	**(7,185,778)**	**(6,727,249)**	**(2,707,990)**

Unit	Item	Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment	45,992,827	-	-	-	-
	Success Based	-	33,584,693	327,566	325,904	324,241
	Network Capital Replacment	-	541,229	1,116,980	1,437,275	1,763,125
	TOTAL	**45,992,827**	**34,125,923**	**1,444,547**	**1,763,179**	**2,087,366**
Free Cash Flow	Raw	-	5,395,624	5,178,927	5,152,775	1,521,614
	PV	-	5,290,845	4,883,035	4,671,516	1,326,440
Bond Amortization	Balance		79,577,520	79,577,520	79,577,520	79,577,520
	Principal		-	-	-	3,358,054
	Interest		3,183,101	3,183,101	3,183,101	3,183,101
	Payment		3,183,101	3,183,101	3,183,101	6,541,155

TILSON

Financials

Unit	Product	Measure	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	**Data High**						
		Subscription	1,563,298	1,666,840	1,712,373	1,715,031	1,715,031
		NRC	-	-	-	-	-
	Data Low						
		Subscription	15,028,504	15,028,504	15,028,504	15,028,504	15,028,504
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		16,214	16,214	16,214	16,214	16,214
	Customer Operations, Advertising, G&A		2,315,457	2,321,078	2,326,669	2,332,232	2,337,183
	Network operating expenses		4,052,863	4,068,945	4,084,943	4,100,857	4,115,022
	TOTAL		**6,384,535**	**6,406,237**	**6,427,826**	**6,449,303**	**6,468,419**
EBITDA			**10,207,268**	**10,289,107**	**10,313,051**	**10,294,232**	**10,275,116**
Tax Depreciation			8,349,551	7,023,479	4,836,899	4,094,826	4,364,739
EBIT			**1,857,717**	**3,265,628**	**5,476,152**	**6,199,405**	**5,910,377**
Interest			3,048,779	2,909,084	2,763,801	2,612,707	2,455,569
Income			**(1,191,062)**	**356,544**	**2,712,351**	**3,586,699**	**3,454,808**
Tax			(10,720)	3,209	24,411	32,280	31,093
Net Income			**(1,180,342)**	**353,335**	**2,687,940**	**3,554,419**	**3,423,715**

Unit	Item	Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment	-	-	-	-	-
	Success Based	322,578	320,915	319,252	317,590	282,671
	Network Capital Replacment	2,089,444	2,410,639	2,720,810	3,013,999	3,284,494
	TOTAL	**2,412,022**	**2,731,554**	**3,040,063**	**3,331,589**	**3,567,166**
Free Cash Flow	Raw	1,264,811	1,013,189	707,423	389,208	135,702
	PV	1,060,170	816,596	548,229	290,022	97,231
Bond Amortization	Balance	76,219,467	72,727,091	69,095,020	65,317,666	61,389,218
	Principal	3,492,376	3,632,071	3,777,354	3,928,448	4,085,586
	Interest	3,048,779	2,909,084	2,763,801	2,612,707	2,455,569
	Payment	6,541,155	6,541,155	6,541,155	6,541,155	6,541,155

TILSON

Financials

Unit	Product	Measure	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	Data High						
		Subscription	1,715,031	1,715,031	1,715,031	1,715,031	1,715,031
		NRC	-	-	-	-	-
	Data Low						
		Subscription	15,028,504	15,028,504	15,028,504	15,028,504	15,028,504
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		16,214	16,214	16,214	16,214	16,214
	Customer Operations, Advertising, G&A		2,343,007	2,348,832	2,354,656	2,360,481	2,366,305
	Network operating expenses		4,131,687	4,148,352	4,165,016	4,181,681	4,198,345
	TOTAL		**6,490,908**	**6,513,398**	**6,535,887**	**6,558,376**	**6,580,865**
EBITDA			**10,252,627**	**10,230,137**	**10,207,648**	**10,185,159**	**10,162,670**
Tax Depreciation			4,628,995	4,895,677	5,161,534	5,414,759	5,654,903
EBIT			**5,623,631**	**5,334,460**	**5,046,114**	**4,770,400**	**4,507,767**
Interest			2,292,145	2,122,185	1,945,426	1,761,597	1,570,415
Income			**3,331,486**	**3,212,275**	**3,100,688**	**3,008,803**	**2,937,352**
Tax			29,983	28,910	27,906	27,079	26,436
Net Income			**3,301,503**	**3,183,365**	**3,072,782**	**2,981,724**	**2,910,916**

Unit	Item	Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment	-	-	-	-	-
	Success Based	332,555	332,555	332,555	332,555	332,555
	Network Capital Replacment	3,526,770	3,737,483	3,913,278	4,052,724	4,156,091
	TOTAL	**3,859,325**	**4,070,037**	**4,245,833**	**4,385,278**	**4,488,646**
Free Cash Flow	Raw	(177,836)	(409,965)	(607,245)	(768,353)	(893,567)
	PV	(122,519)	(271,579)	(386,795)	(470,591)	(526,232)
Bond Amortization	Balance	57,303,632	53,054,623	48,635,653	44,039,925	39,260,367
	Principal	4,249,009	4,418,970	4,595,728	4,779,558	4,970,740
	Interest	2,292,145	2,122,185	1,945,426	1,761,597	1,570,415
	Payment	6,541,155	6,541,155	6,541,155	6,541,155	6,541,155

Financials

Unit	Product	Measure	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	Data High						
		Subscription	1,715,031	1,715,031	1,715,031	1,715,031	1,715,031
		NRC	-	-	-	-	-
	Data Low						
		Subscription	15,028,504	15,028,504	15,028,504	15,028,504	15,028,504
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		16,214	16,214	16,214	16,214	16,214
	Customer Operations, Advertising, G&A		2,372,130	2,377,955	2,383,779	2,389,604	2,395,428
	Network operating expenses		4,215,010	4,231,675	4,248,339	4,265,004	4,281,669
	TOTAL		**6,603,354**	**6,625,844**	**6,648,333**	**6,670,822**	**6,693,311**
EBITDA			**10,140,181**	**10,117,692**	**10,095,202**	**10,072,713**	**10,050,224**
Tax Depreciation			5,880,789	5,415,568	4,422,372	4,067,341	4,136,052
EBIT			**4,259,392**	**4,702,124**	**5,672,831**	**6,005,373**	**5,914,172**
Interest			1,371,585	1,164,802	949,748	726,092	493,489
Income			**2,887,807**	**3,537,321**	**4,723,083**	**5,279,281**	**5,420,683**
Tax			25,990	31,836	42,508	47,514	48,786
Net Income			**2,861,817**	**3,505,485**	**4,680,575**	**5,231,767**	**5,371,896**

Unit	Item	Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment	-	-	-	-	-
	Success Based	332,555	332,555	332,555	332,555	332,555
	Network Capital Replacment	4,225,428	4,264,481	4,278,464	4,273,687	4,253,139
	TOTAL	**4,557,983**	**4,597,036**	**4,611,019**	**4,606,241**	**4,585,694**
Free Cash Flow	Raw	(984,947)	(1,052,335)	(1,099,479)	(1,122,196)	(1,125,411)
	PV	(557,737)	(572,977)	(575,621)	(564,918)	(544,746)
Bond Amortization	Balance	34,289,627	29,120,058	23,743,706	18,152,299	12,337,237
	Principal	5,169,569	5,376,352	5,591,406	5,815,063	6,047,665
	Interest	1,371,585	1,164,802	949,748	726,092	493,489
	Payment	6,541,155	6,541,155	6,541,155	6,541,155	6,541,155

TILSON

Financials

Unit	Product	Measure	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	**Data High**						
		Subscription	1,715,031	1,715,031	1,715,031	1,715,031	1,715,031
		NRC	-	-	-	-	-
	Data Low						
		Subscription	15,028,504	15,028,504	15,028,504	15,028,504	15,028,504
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		16,214	16,214	16,214	16,214	16,214
	Customer Operations, Advertising, G&A		2,401,253	2,407,077	2,412,902	2,418,726	2,424,551
	Network operating expenses		4,298,333	4,314,998	4,331,662	4,348,327	4,364,992
	TOTAL		**6,715,800**	**6,738,289**	**6,760,779**	**6,783,268**	**6,805,757**
EBITDA			**10,027,735**	**10,005,246**	**9,982,757**	**9,960,267**	**9,937,778**
Tax Depreciation			4,195,968	4,286,255	4,351,978	4,392,751	4,434,668
EBIT			**5,831,767**	**5,718,991**	**5,630,779**	**5,567,516**	**5,503,111**
Interest			251,583	-	-	-	-
Income			**5,580,184**	**5,718,991**	**5,630,779**	**5,567,516**	**5,503,111**
Tax			50,222	51,471	50,677	50,108	49,528
Net Income			**5,529,963**	**5,667,520**	**5,580,102**	**5,517,408**	**5,453,583**

Unit	Item	Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment	-	-	-	-	-
	Success Based	332,555	332,555	332,555	332,555	332,555
	Network Capital Replacment	4,230,276	4,208,840	4,194,157	4,190,092	4,198,826
	TOTAL	**4,562,831**	**4,541,394**	**4,526,712**	**4,522,646**	**4,531,381**
Free Cash Flow	Raw	(1,126,472)	5,412,380	5,405,368	5,387,514	5,356,869
	PV	(524,289)	2,422,171	2,325,993	2,229,145	2,131,217
Bond Amortization	Balance	6,289,572	(0)	(0)	(0)	(0)
	Principal	6,289,572	-	-	-	-
	Interest	251,583	-	-	-	-
	Payment	6,541,155	-	-	-	-

Financials

Unit	Product	Measure	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	Data High						
		Subscription	1,715,031	1,715,031	1,715,031	1,715,031	1,715,031
		NRC	-	-	-	-	-
	Data Low						
		Subscription	15,028,504	15,028,504	15,028,504	15,028,504	15,028,504
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		16,214	16,214	16,214	16,214	16,214
	Customer Operations, Advertising, G&A		2,430,375	2,436,200	2,442,025	2,447,849	2,453,674
	Network operating expenses		4,381,656	4,398,321	4,414,986	4,431,650	4,448,315
	TOTAL		**6,828,246**	**6,850,735**	**6,873,224**	**6,895,714**	**6,918,203**
EBITDA			**9,915,289**	**9,892,800**	**9,870,311**	**9,847,822**	**9,825,332**
Tax Depreciation			4,471,762	4,496,775	4,521,463	4,548,108	4,577,407
EBIT			**5,443,527**	**5,396,025**	**5,348,847**	**5,299,714**	**5,247,925**
Interest			-	-	-	-	-
Income			**5,443,527**	**5,396,025**	**5,348,847**	**5,299,714**	**5,247,925**
Tax			48,992	48,564	48,140	47,697	47,231
Net Income			**5,394,535**	**5,347,461**	**5,300,708**	**5,252,017**	**5,200,694**

Unit	Item	Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment	-	-	-	-	-
	Success Based	332,555	332,555	332,555	332,555	332,555
	Network Capital Replacment	4,220,849	4,255,135	4,299,487	4,350,974	4,406,389
	TOTAL	**4,553,404**	**4,587,690**	**4,632,042**	**4,683,529**	**4,738,944**
Free Cash Flow	Raw	5,312,894	5,256,546	5,190,129	5,116,595	5,039,157
	PV	2,032,424	1,933,527	1,835,670	1,740,060	1,647,812
Bond Amortization	Balance	(0)	(0)	(0)	(0)	(0)
	Principal	-	-	-	-	-
	Interest	-	-	-	-	-
	Payment	-	-	-	-	-

TILSON

Financials

Unit	Product	Measure		Year 30
Revenues	Data High			
		Subscription		1,715,031
		NRC		-
	Data Low			
		Subscription		15,028,504
		NRC		-
	Voice			
		Subscription		-
		NRC		-
Operational Costs	Voice expenses			-
	Customer Acquisition			
		Data High		-
		Data Low		-
		TOTAL		-
	Service Install			16,214
	Customer Operations, Advertising, G&A			2,459,498
	Network operating expenses			4,464,979
	TOTAL			**6,940,692**
EBITDA				**9,802,843**
Tax Depreciation				4,609,574
EBIT				**5,193,269**
Interest				-
Income				**5,193,269**
Tax				46,739
Net Income				**5,146,530**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			332,555
	Network Capital Replacment			4,462,662
	TOTAL			**4,795,217**
Free Cash Flow	Raw			4,960,887
	PV			1,559,825
Bond Amortization	Balance			(0)
	Principal			-
	Interest			-
	Payment			-

TILSON

C.2.4 Dark Fiber

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	2,549	6,580	8,465	9,139
			Bus	-	206	721	1,099	1,202
			Total	-	2,755	7,301	9,565	10,341
	Data High							
		Average	Res	-	2,413	6,228	8,012	8,649
			Bus	-	186	649	989	1,082
			Total	-	2,598	6,877	9,002	9,732
	Data Low							
		Average	Res	-	2,549	6,580	8,465	9,139
			Bus	-	206	721	1,099	1,202
			Total	-	2,755	7,301	9,565	10,341
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	5	5	5	5
			Bus	-	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	-	47	47	47	47
			Bus	-	47	47	47	47
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	9,802	10,466	10,755	10,775	10,775
			Bus	1,271	1,340	1,374	1,374	1,374
			Total	11,074	11,806	12,129	12,149	12,149
	Data High							
		Average	Res	9,278	9,906	10,179	10,197	10,197
			Bus	1,144	1,206	1,237	1,237	1,237
			Total	10,422	11,112	11,416	11,434	11,434
	Data Low							
		Average	Res	9,802	10,466	10,755	10,775	10,775
			Bus	1,271	1,340	1,374	1,374	1,374
			Total	11,074	11,806	12,129	12,149	12,149
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	47	47	47	47	47
			Bus	47	47	47	47	47
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	10,775	10,775	10,775	10,775	10,775
			Bus	1,374	1,374	1,374	1,374	1,374
			Total	12,149	12,149	12,149	12,149	12,149
	Data High							
		Average	Res	10,197	10,197	10,197	10,197	10,197
			Bus	1,237	1,237	1,237	1,237	1,237
			Total	11,434	11,434	11,434	11,434	11,434
	Data Low							
		Average	Res	10,775	10,775	10,775	10,775	10,775
			Bus	1,374	1,374	1,374	1,374	1,374
			Total	12,149	12,149	12,149	12,149	12,149
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	47	47	47	47	47
			Bus	47	47	47	47	47
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	**Total Customers**							
		Average	Res	10,775	10,775	10,775	10,775	10,775
			Bus	1,374	1,374	1,374	1,374	1,374
			Total	12,149	12,149	12,149	12,149	12,149
	Data High							
		Average	Res	10,197	10,197	10,197	10,197	10,197
			Bus	1,237	1,237	1,237	1,237	1,237
			Total	11,434	11,434	11,434	11,434	11,434
	Data Low							
		Average	Res	10,775	10,775	10,775	10,775	10,775
			Bus	1,374	1,374	1,374	1,374	1,374
			Total	12,149	12,149	12,149	12,149	12,149
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	47	47	47	47	47
			Bus	47	47	47	47	47
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	10,775	10,775	10,775	10,775	10,775
			Bus	1,374	1,374	1,374	1,374	1,374
			Total	12,149	12,149	12,149	12,149	12,149
	Data High							
		Average	Res	10,197	10,197	10,197	10,197	10,197
			Bus	1,237	1,237	1,237	1,237	1,237
			Total	11,434	11,434	11,434	11,434	11,434
	Data Low							
		Average	Res	10,775	10,775	10,775	10,775	10,775
			Bus	1,374	1,374	1,374	1,374	1,374
			Total	12,149	12,149	12,149	12,149	12,149
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	47	47	47	47	47
			Bus	47	47	47	47	47
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	**Total Customers**							
		Average	Res	10,775	10,775	10,775	10,775	10,775
			Bus	1,374	1,374	1,374	1,374	1,374
			Total	12,149	12,149	12,149	12,149	12,149
	Data High							
		Average	Res	10,197	10,197	10,197	10,197	10,197
			Bus	1,237	1,237	1,237	1,237	1,237
			Total	11,434	11,434	11,434	11,434	11,434
	Data Low							
		Average	Res	10,775	10,775	10,775	10,775	10,775
			Bus	1,374	1,374	1,374	1,374	1,374
			Total	12,149	12,149	12,149	12,149	12,149
	Voice							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	**Data High**							
		Data High	Res	5	5	5	5	5
			Bus	5	5	5	5	5
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Data Low							
		Data Low	Res	47	47	47	47	47
			Bus	47	47	47	47	47
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-
	Voice							
		Voice	Res	-	-	-	-	-
			Bus	-	-	-	-	-
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	Total Customers			
		Average	Res	10,775
			Bus	1,374
			Total	12,149
	Data High			
		Average	Res	10,197
			Bus	1,237
			Total	11,434
	Data Low			
		Average	Res	10,775
			Bus	1,374
			Total	12,149
	Voice			
		Average	Res	-
			Bus	-
			Total	-

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	Data High			
		Data High	Res	5
			Bus	5
		NRC	Res	-
			Bus	-
	Data Low			
		Data Low	Res	47
			Bus	47
		NRC	Res	-
			Bus	-
	Voice			
		Voice	Res	-
			Bus	-
		NRC	Res	-
			Bus	-

Financials

Unit	Product	Measure	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	**Data High**						
		Subscription	-	155,903	412,626	540,099	583,903
		NRC	-	-	-	-	-
	Data Low						
		Subscription	-	1,538,926	4,078,037	5,342,279	5,775,975
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		-	-	-	-	-
	Customer Operations, Advertising, G&A		-	176,384	230,364	257,241	266,461
	Network operating expenses		-	1,941,816	1,941,816	1,941,816	1,941,816
	TOTAL		**-**	**2,118,200**	**2,172,180**	**2,199,057**	**2,208,277**
EBITDA			**-**	**(423,371)**	**2,318,483**	**3,683,321**	**4,151,601**
Tax Depreciation			-	5,126,719	8,570,684	5,871,259	4,242,972
EBIT			**-**	**(5,550,091)**	**(6,252,200)**	**(2,187,938)**	**(91,372)**
Interest			-	1,640,550	1,640,550	1,640,550	1,640,550
Income			**-**	**(7,190,641)**	**(7,892,750)**	**(3,828,488)**	**(1,731,922)**
Tax			-	(64,716)	(71,035)	(34,456)	(15,587)
Net Income			**-**	**(7,125,925)**	**(7,821,716)**	**(3,794,032)**	**(1,716,335)**

Unit	Item	Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment	41,013,754	-	-	-	-
	Success Based	-	-	-	-	-
	Network Capital Replacment	-	482,637	643,629	808,253	974,050
	TOTAL	**41,013,754**	**482,637**	**643,629**	**808,253**	**974,050**
Free Cash Flow	Raw	-	(2,481,843)	105,338	1,268,974	(178,132)
	PV	-	(2,433,647)	99,320	1,150,454	(155,283)
Bond Amortization	Balance		41,013,754	41,013,754	41,013,754	41,013,754
	Principal		-	-	-	1,730,720
	Interest		1,640,550	1,640,550	1,640,550	1,640,550
	Payment		1,640,550	1,640,550	1,640,550	3,371,270

Financials

Unit	Product	Measure	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	Data High						
		Subscription	625,319	666,736	684,949	686,012	686,012
		NRC	-	-	-	-	-
	Data Low						
		Subscription	6,184,984	6,593,993	6,774,629	6,785,625	6,785,625
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		-	-	-	-	-
	Customer Operations, Advertising, G&A		275,156	283,852	287,692	287,926	287,926
	Network operating expenses		1,941,816	1,941,816	1,941,816	1,941,816	1,941,816
	TOTAL		**2,216,972**	**2,225,667**	**2,229,508**	**2,229,741**	**2,229,741**
EBITDA			**4,593,331**	**5,035,061**	**5,230,071**	**5,241,896**	**5,241,896**
Tax Depreciation			4,208,673	3,021,694	1,909,464	2,039,386	2,172,731
EBIT			**384,658**	**2,013,368**	**3,320,607**	**3,202,510**	**3,069,166**
Interest			1,571,321	1,499,323	1,424,446	1,346,573	1,265,585
Income			**(1,186,663)**	**514,044**	**1,896,161**	**1,855,938**	**1,803,581**
Tax			(10,680)	4,626	17,065	16,703	16,232
Net Income			**(1,175,983)**	**509,418**	**1,879,096**	**1,839,234**	**1,787,349**

Unit	Item	Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment	-	-	-	-	-
	Success Based	-	-	-	-	-
	Network Capital Replacment	1,138,259	1,297,907	1,449,921	1,591,270	1,719,133
	TOTAL	**1,138,259**	**1,297,907**	**1,449,921**	**1,591,270**	**1,719,133**
Free Cash Flow	Raw	94,482	361,258	391,815	262,653	135,261
	PV	79,195	291,161	303,644	195,719	96,915
Bond Amortization	Balance	39,283,034	37,483,085	35,611,139	33,664,315	31,639,617
	Principal	1,799,949	1,871,947	1,946,824	2,024,697	2,105,685
	Interest	1,571,321	1,499,323	1,424,446	1,346,573	1,265,585
	Payment	3,371,270	3,371,270	3,371,270	3,371,270	3,371,270

Financials

Unit	Product	Measure	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	Data High						
		Subscription	686,012	686,012	686,012	686,012	686,012
		NRC	-	-	-	-	-
	Data Low						
		Subscription	6,785,625	6,785,625	6,785,625	6,785,625	6,785,625
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		-	-	-	-	-
	Customer Operations, Advertising, G&A		287,926	287,926	287,926	287,926	287,926
	Network operating expenses		1,941,816	1,941,816	1,941,816	1,941,816	1,941,816
	TOTAL		**2,229,741**	**2,229,741**	**2,229,741**	**2,229,741**	**2,229,741**
EBITDA			**5,241,896**	**5,241,896**	**5,241,896**	**5,241,896**	**5,241,896**
Tax Depreciation			2,301,382	2,431,492	2,552,967	2,670,177	2,779,648
EBIT			**2,940,514**	**2,810,404**	**2,688,929**	**2,571,719**	**2,462,248**
Interest			1,181,357	1,093,761	1,002,660	907,916	809,382
Income			**1,759,157**	**1,716,643**	**1,686,269**	**1,663,803**	**1,652,867**
Tax			15,832	15,450	15,176	14,974	14,876
Net Income			**1,743,324**	**1,701,193**	**1,671,092**	**1,648,829**	**1,637,991**

Unit	Item	Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment	-	-	-	-	-
	Success Based	-	-	-	-	-
	Network Capital Replacment	1,831,074	1,925,218	2,000,407	2,056,330	2,093,587
	TOTAL	**1,831,074**	**1,925,218**	**2,000,407**	**2,056,330**	**2,093,587**
Free Cash Flow	Raw	23,720	(70,041)	(144,957)	(200,677)	(237,836)
	PV	16,342	(46,398)	(92,333)	(122,908)	(140,064)
Bond Amortization	Balance	29,533,932	27,344,019	25,066,510	22,697,901	20,234,547
	Principal	2,189,913	2,277,509	2,368,610	2,463,354	2,561,888
	Interest	1,181,357	1,093,761	1,002,660	907,916	809,382
	Payment	3,371,270	3,371,270	3,371,270	3,371,270	3,371,270

TILSON

Financials

Unit	Product	Measure	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	Data High						
		Subscription	686,012	686,012	686,012	686,012	686,012
		NRC	-	-	-	-	-
	Data Low						
		Subscription	6,785,625	6,785,625	6,785,625	6,785,625	6,785,625
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		-	-	-	-	-
	Customer Operations, Advertising, G&A		287,926	287,926	287,926	287,926	287,926
	Network operating expenses		1,941,816	1,941,816	1,941,816	1,941,816	1,941,816
	TOTAL		**2,229,741**	**2,229,741**	**2,229,741**	**2,229,741**	**2,229,741**
EBITDA			**5,241,896**	**5,241,896**	**5,241,896**	**5,241,896**	**5,241,896**
Tax Depreciation			2,880,339	2,370,843	1,836,713	1,893,264	1,937,188
EBIT			**2,361,557**	**2,871,053**	**3,405,184**	**3,348,632**	**3,304,709**
Interest			706,906	600,332	489,494	374,223	254,341
Income			**1,654,651**	**2,270,721**	**2,915,690**	**2,974,409**	**3,050,367**
Tax			14,892	20,436	26,241	26,770	27,453
Net Income			**1,639,759**	**2,250,285**	**2,889,448**	**2,947,639**	**3,022,914**

Unit	Item	Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment	-	-	-	-	-
	Success Based	-	-	-	-	-
	Network Capital Replacment	2,113,698	2,119,022	2,112,605	2,097,952	2,078,743
	TOTAL	**2,113,698**	**2,119,022**	**2,112,605**	**2,097,952**	**2,078,743**
Free Cash Flow	Raw	(257,963)	(268,832)	(268,220)	(254,095)	(235,570)
	PV	(146,074)	(146,374)	(140,424)	(127,913)	(114,026)
Bond Amortization	Balance	17,672,658	15,008,295	12,237,357	9,355,581	6,358,534
	Principal	2,664,364	2,770,938	2,881,776	2,997,047	3,116,929
	Interest	706,906	600,332	489,494	374,223	254,341
	Payment	3,371,270	3,371,270	3,371,270	3,371,270	3,371,270

Financials

Unit	Product	Measure	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	Data High						
		Subscription	686,012	686,012	686,012	686,012	686,012
		NRC	-	-	-	-	-
	Data Low						
		Subscription	6,785,625	6,785,625	6,785,625	6,785,625	6,785,625
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		-	-	-	-	-
	Customer Operations, Advertising, G&A		287,926	287,926	287,926	287,926	287,926
	Network operating expenses		1,941,816	1,941,816	1,941,816	1,941,816	1,941,816
	TOTAL		**2,229,741**	**2,229,741**	**2,229,741**	**2,229,741**	**2,229,741**
EBITDA			**5,241,896**	**5,241,896**	**5,241,896**	**5,241,896**	**5,241,896**
Tax Depreciation			1,969,857	1,993,021	2,008,665	2,018,839	2,025,505
EBIT			**3,272,040**	**3,248,875**	**3,233,232**	**3,223,057**	**3,216,391**
Interest			129,664	-	-	-	-
Income			**3,142,375**	**3,248,875**	**3,233,232**	**3,223,057**	**3,216,391**
Tax			28,281	29,240	29,099	29,008	28,948
Net Income			**3,114,094**	**3,219,635**	**3,204,132**	**3,194,050**	**3,187,443**

Unit	Item	Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment	-	-	-	-	-
	Success Based	-	-	-	-	-
	Network Capital Replacment	2,058,532	2,040,446	2,026,944	2,019,647	2,019,269
	TOTAL	**2,058,532**	**2,040,446**	**2,026,944**	**2,019,647**	**2,019,269**
Free Cash Flow	Raw	(216,187)	3,172,211	3,185,853	3,193,242	3,193,679
	PV	(100,619)	1,419,641	1,370,910	1,321,240	1,270,597
Bond Amortization	Balance	3,241,606	-	-	-	-
	Principal	3,241,606	-	-	-	-
	Interest	129,664	-	-	-	-
	Payment	3,371,270	-	-	-	-

Financials

Unit	Product	Measure	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	Data High						
		Subscription	686,012	686,012	686,012	686,012	686,012
		NRC	-	-	-	-	-
	Data Low						
		Subscription	6,785,625	6,785,625	6,785,625	6,785,625	6,785,625
		NRC	-	-	-	-	-
	Voice						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	-	-	-	-
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	-	-	-	-
		TOTAL	-	-	-	-	-
	Service Install		-	-	-	-	-
	Customer Operations, Advertising, G&A		287,926	287,926	287,926	287,926	287,926
	Network operating expenses		1,941,816	1,941,816	1,941,816	1,941,816	1,941,816
	TOTAL		**2,229,741**	**2,229,741**	**2,229,741**	**2,229,741**	**2,229,741**
EBITDA			**5,241,896**	**5,241,896**	**5,241,896**	**5,241,896**	**5,241,896**
Tax Depreciation			2,030,393	2,034,893	2,040,004	2,046,321	2,054,080
EBIT			**3,211,504**	**3,207,004**	**3,201,893**	**3,195,575**	**3,187,817**
Interest			-	-	-	-	-
Income			**3,211,504**	**3,207,004**	**3,201,893**	**3,195,575**	**3,187,817**
Tax			28,904	28,863	28,817	28,760	28,690
Net Income			**3,182,600**	**3,178,141**	**3,173,076**	**3,166,815**	**3,159,126**

Unit	Item	Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment	-	-	-	-	-
	Success Based	-	-	-	-	-
	Network Capital Replacment	2,025,664	2,037,960	2,054,774	2,074,448	2,095,292
	TOTAL	**2,025,664**	**2,037,960**	**2,054,774**	**2,074,448**	**2,095,292**
Free Cash Flow	Raw	3,187,329	3,175,073	3,158,306	3,138,688	3,117,914
	PV	1,219,299	1,167,894	1,117,045	1,067,410	1,019,563
Bond Amortization	Balance	-	-	-	-	-
	Principal	-	-	-	-	-
	Interest	-	-	-	-	-
	Payment	-	-	-	-	-

TILSON

Financials

Unit	Product	Measure		Year 30
Revenues	Data High			
		Subscription		686,012
		NRC		-
	Data Low			
		Subscription		6,785,625
		NRC		-
	Voice			
		Subscription		-
		NRC		-
Operational Costs	Voice expenses			-
	Customer Acquisition			
		Data High		-
		Data Low		-
		TOTAL		-
	Service Install			-
	Customer Operations, Advertising, G&A			287,926
	Network operating expenses			1,941,816
	TOTAL			**2,229,741**
EBITDA				**5,241,896**
Tax Depreciation				2,063,220
EBIT				**3,178,677**
Interest				-
Income				**3,178,677**
Tax				28,608
Net Income				**3,150,069**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			-
	Network Capital Replacment			2,115,778
	TOTAL			**2,115,778**
Free Cash Flow	Raw			3,097,510
	PV			973,933
Bond Amortization	Balance			-
	Principal			-
	Interest			-
	Payment			-

TILSON

C.2.5 Rural Wireless

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
Demand	**Total Customers**							
		Average	Res	-	482	1,244	1,601	1,729
			Bus	-	41	142	216	237
			Total	-	522	1,386	1,818	1,965
	Data High							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-
	Data Low							
		Average	Res	-	482	1,244	1,601	1,729
			Bus	-	41	142	216	237
			Total	-	522	1,386	1,818	1,965
	Voice							
		Average	Res	-	169	435	560	605
			Bus	-	14	50	76	83
			Total	-	183	485	636	688

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 0	Year 1	Year 2	Year 3	Year 4
ARPU	**Data High**							
		Data High	Res	-	70	70	70	70
			Bus	-	100	100	100	100
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Data Low							
		Data Low	Res	-	35	35	35	35
			Bus	-	35	35	35	35
		NRC	Res	-	150	150	150	150
			Bus	-	150	150	150	150
	Voice							
		Voice	Res	-	20	20	20	20
			Bus	-	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
Demand	**Total Customers**							
		Average	Res	1,853	1,977	2,035	2,042	2,042
			Bus	250	264	270	270	270
			Total	2,103	2,241	2,306	2,313	2,313
	Data High							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-
	Data Low							
		Average	Res	1,853	1,977	2,035	2,042	2,042
			Bus	250	264	270	270	270
			Total	2,103	2,241	2,306	2,313	2,313
	Voice							
		Average	Res	649	692	712	715	715
			Bus	88	92	95	95	95
			Total	736	784	807	809	809

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 5	Year 6	Year 7	Year 8	Year 9
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	35	35	35	35	35
			Bus	35	35	35	35	35
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
Demand	**Total Customers**							
		Average	Res	2,042	2,042	2,042	2,042	2,042
			Bus	270	270	270	270	270
			Total	2,313	2,313	2,313	2,313	2,313
	Data High							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-
	Data Low							
		Average	Res	2,042	2,042	2,042	2,042	2,042
			Bus	270	270	270	270	270
			Total	2,313	2,313	2,313	2,313	2,313
	Voice							
		Average	Res	715	715	715	715	715
			Bus	95	95	95	95	95
			Total	809	809	809	809	809

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 10	Year 11	Year 12	Year 13	Year 14
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	35	35	35	35	35
			Bus	35	35	35	35	35
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
Demand	**Total Customers**							
		Average	Res	2,042	2,042	2,042	2,042	2,042
			Bus	270	270	270	270	270
			Total	2,313	2,313	2,313	2,313	2,313
	Data High							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-
	Data Low							
		Average	Res	2,042	2,042	2,042	2,042	2,042
			Bus	270	270	270	270	270
			Total	2,313	2,313	2,313	2,313	2,313
	Voice							
		Average	Res	715	715	715	715	715
			Bus	95	95	95	95	95
			Total	809	809	809	809	809

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 15	Year 16	Year 17	Year 18	Year 19
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	35	35	35	35	35
			Bus	35	35	35	35	35
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
Demand	**Total Customers**							
		Average	Res	2,042	2,042	2,042	2,042	2,042
			Bus	270	270	270	270	270
			Total	2,313	2,313	2,313	2,313	2,313
	Data High							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-
	Data Low							
		Average	Res	2,042	2,042	2,042	2,042	2,042
			Bus	270	270	270	270	270
			Total	2,313	2,313	2,313	2,313	2,313
	Voice							
		Average	Res	715	715	715	715	715
			Bus	95	95	95	95	95
			Total	809	809	809	809	809

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 20	Year 21	Year 22	Year 23	Year 24
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	35	35	35	35	35
			Bus	35	35	35	35	35
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
Demand	**Total Customers**							
		Average	Res	2,042	2,042	2,042	2,042	2,042
			Bus	270	270	270	270	270
			Total	2,313	2,313	2,313	2,313	2,313
	Data High							
		Average	Res	-	-	-	-	-
			Bus	-	-	-	-	-
			Total	-	-	-	-	-
	Data Low							
		Average	Res	2,042	2,042	2,042	2,042	2,042
			Bus	270	270	270	270	270
			Total	2,313	2,313	2,313	2,313	2,313
	Voice							
		Average	Res	715	715	715	715	715
			Bus	95	95	95	95	95
			Total	809	809	809	809	809

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 25	Year 26	Year 27	Year 28	Year 29
ARPU	**Data High**							
		Data High	Res	70	70	70	70	70
			Bus	100	100	100	100	100
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Data Low							
		Data Low	Res	35	35	35	35	35
			Bus	35	35	35	35	35
		NRC	Res	150	150	150	150	150
			Bus	150	150	150	150	150
	Voice							
		Voice	Res	20	20	20	20	20
			Bus	20	20	20	20	20
		NRC	Res	-	-	-	-	-
			Bus	-	-	-	-	-

DEMAND

Unit	Product	Measure	Res/Bus/Total	Year 30
Demand	Total Customers			
		Average	Res	2,042
			Bus	270
			Total	2,313
	Data High			
		Average	Res	-
			Bus	-
			Total	-
	Data Low			
		Average	Res	2,042
			Bus	270
			Total	2,313
	Voice			
		Average	Res	715
			Bus	95
			Total	809

ARPU

Unit	Product	Measure	Res/Bus/Total	Year 30
ARPU	Data High			
		Data High	Res	70
			Bus	100
		NRC	Res	150
			Bus	150
	Data Low			
		Data Low	Res	35
			Bus	35
		NRC	Res	150
			Bus	150
	Voice			
		Voice	Res	20
			Bus	20
		NRC	Res	-
			Bus	-

Financials

Unit	Product	Measure	Year 0	Year 1	Year 2	Year 3	Year 4
Revenues	Data High						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
	Data Low						
		Subscription	-	219,275	582,038	763,368	825,493
		NRC	-	157,408	104,570	29,757	20,293
	Voice						
		Subscription	-	43,855	116,408	152,674	165,099
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		-	540	1,433	1,879	2,032
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	-	10,494	6,971	1,984	1,353
		TOTAL	-	10,494	6,971	1,984	1,353
	Service Install		-	78,704	52,285	14,878	10,146
	Customer Operations, Advertising, G&A		-	161,904	230,631	263,610	275,521
	Network operating expenses		-	281,555	295,992	300,094	302,886
	TOTAL		**-**	**533,198**	**587,311**	**582,445**	**591,937**
EBITDA			**-**	**(112,659)**	**215,704**	**363,354**	**418,947**
Tax Depreciation			-	760,408	1,334,842	1,019,443	784,822
EBIT			**-**	**(873,067)**	**(1,119,138)**	**(656,088)**	**(365,875)**
Interest			-	263,688	263,688	263,688	263,688
Income			**-**	**(1,136,755)**	**(1,382,825)**	**(919,776)**	**(629,563)**
Tax			-	(13,641)	(16,594)	(11,037)	(7,555)
Net Income			**-**	**(1,123,114)**	**(1,366,232)**	**(908,739)**	**(622,008)**

Unit	Item	Year 0	Year 1	Year 2	Year 3	Year 4
Capital	Initial Deployment	6,083,267	-	-	-	-
	Success Based	-	508,928	338,009	96,037	65,374
	Network Capital Replacment	-	71,586	101,454	131,846	160,938
	TOTAL	**6,083,267**	**580,514**	**439,462**	**227,884**	**226,312**
Free Cash Flow	Raw	-	(434,292)	(470,852)	(117,180)	(341,679)
	PV	-	(425,858)	(443,950)	(106,236)	(297,853)
Bond Amortization	Balance		6,592,195	6,592,195	6,592,195	6,592,195
	Principal		-	-	-	278,181
	Interest		263,688	263,688	263,688	263,688
	Payment		263,688	263,688	263,688	541,869

Financials

Unit	Product	Measure	Year 5	Year 6	Year 7	Year 8	Year 9
Revenues	Data High						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
	Data Low						
		Subscription	883,310	941,126	968,347	971,286	971,286
		NRC	27,108	20,706	5,558	3,469	3,469
	Voice						
		Subscription	176,662	188,225	193,669	194,257	194,257
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		2,174	2,316	2,383	2,391	2,391
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	1,807	1,380	371	231	231
		TOTAL	1,807	1,380	371	231	231
	Service Install		13,554	10,353	2,779	1,734	1,734
	Customer Operations, Advertising, G&A		287,105	298,297	303,307	304,014	304,215
	Network operating expenses		306,616	309,459	310,208	310,665	311,120
	TOTAL		**611,256**	**621,806**	**619,047**	**619,035**	**619,691**
EBITDA			**475,823**	**528,251**	**548,527**	**549,977**	**549,321**
Tax Depreciation			753,519	573,705	401,264	396,306	400,658
EBIT			**(277,696)**	**(45,454)**	**147,263**	**153,671**	**148,664**
Interest			252,561	240,988	228,953	216,436	203,419
Income			**(530,256)**	**(286,442)**	**(81,690)**	**(62,766)**	**(54,756)**
Tax			(6,363)	(3,437)	(980)	(753)	(657)
Net Income			**(523,893)**	**(283,005)**	**(80,710)**	**(62,013)**	**(54,098)**

Unit	Item	Year 5	Year 6	Year 7	Year 8	Year 9
Capital	Initial Deployment	-	-	-	-	-
	Success Based	87,343	66,568	17,522	10,711	10,655
	Network Capital Replacment	189,854	218,607	246,265	271,899	295,322
	TOTAL	**277,196**	**285,175**	**263,788**	**282,611**	**305,977**
Free Cash Flow	Raw	(336,879)	(295,355)	(256,149)	(273,749)	(297,868)
	PV	(282,373)	(238,046)	(198,507)	(203,987)	(213,422)
Bond Amortization	Balance	6,314,014	6,024,706	5,723,825	5,410,910	5,085,477
	Principal	289,308	300,880	312,916	325,432	338,450
	Interest	252,561	240,988	228,953	216,436	203,419
	Payment	541,869	541,869	541,869	541,869	541,869

Financials

Unit	Product	Measure	Year 10	Year 11	Year 12	Year 13	Year 14
Revenues	Data High						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
	Data Low						
		Subscription	971,286	971,286	971,286	971,286	971,286
		NRC	3,469	3,469	3,469	3,469	3,469
	Voice						
		Subscription	194,257	194,257	194,257	194,257	194,257
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		2,391	2,391	2,391	2,391	2,391
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	231	231	231	231	231
		TOTAL	231	231	231	231	231
	Service Install		1,734	1,734	1,734	1,734	1,734
	Customer Operations, Advertising, G&A		304,414	304,613	304,811	305,007	305,203
	Network operating expenses		311,573	312,023	312,471	312,917	313,360
	TOTAL		**620,344**	**620,993**	**621,638**	**622,280**	**622,919**
EBITDA			**548,669**	**548,020**	**547,374**	**546,732**	**546,094**
Tax Depreciation			416,331	435,091	453,074	472,584	492,556
EBIT			**132,338**	**112,929**	**94,300**	**74,149**	**53,537**
Interest			189,881	175,802	161,159	145,931	130,093
Income			**(57,543)**	**(62,873)**	**(66,859)**	**(71,782)**	**(76,556)**
Tax			(691)	(754)	(802)	(861)	(919)
Net Income			**(56,853)**	**(62,119)**	**(66,057)**	**(70,921)**	**(75,637)**

Unit	Item	Year 10	Year 11	Year 12	Year 13	Year 14
Capital	Initial Deployment	-	-	-	-	-
	Success Based	10,599	10,543	10,487	10,431	10,375
	Network Capital Replacment	316,144	334,010	348,683	360,062	368,200
	TOTAL	**326,743**	**344,553**	**359,170**	**370,492**	**378,575**
Free Cash Flow	Raw	(319,252)	(337,648)	(352,862)	(364,767)	(373,431)
	PV	(219,947)	(223,673)	(224,761)	(223,408)	(219,918)
Bond Amortization	Balance	4,747,028	4,395,040	4,028,973	3,648,263	3,252,325
	Principal	351,988	366,067	380,710	395,938	411,776
	Interest	189,881	175,802	161,159	145,931	130,093
	Payment	541,869	541,869	541,869	541,869	541,869

Financials

Unit	Product	Measure	Year 15	Year 16	Year 17	Year 18	Year 19
Revenues	Data High						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
	Data Low						
		Subscription	971,286	971,286	971,286	971,286	971,286
		NRC	3,469	3,469	3,469	3,469	3,469
	Voice						
		Subscription	194,257	194,257	194,257	194,257	194,257
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		2,391	2,391	2,391	2,391	2,391
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	231	231	231	231	231
		TOTAL	231	231	231	231	231
	Service Install		1,734	1,734	1,734	1,734	1,734
	Customer Operations, Advertising, G&A		305,397	305,590	305,783	305,974	306,164
	Network operating expenses		313,801	314,239	314,675	315,108	315,539
	TOTAL		**623,554**	**624,186**	**624,814**	**625,439**	**626,060**
EBITDA			**545,458**	**544,827**	**544,199**	**543,574**	**542,952**
Tax Depreciation			511,310	439,390	356,161	355,185	356,755
EBIT			**34,149**	**105,437**	**188,037**	**188,388**	**186,197**
Interest			113,622	96,492	78,677	60,149	40,881
Income			**(79,473)**	**8,945**	**109,360**	**128,239**	**145,317**
Tax			(954)	107	1,312	1,539	1,744
Net Income			**(78,519)**	**8,837**	**108,048**	**126,700**	**143,573**

Unit	Item	Year 15	Year 16	Year 17	Year 18	Year 19
Capital	Initial Deployment	-	-	-	-	-
	Success Based	10,319	10,263	10,207	10,151	10,094
	Network Capital Replacment	373,310	375,750	376,005	374,648	372,178
	TOTAL	**383,629**	**386,013**	**386,212**	**384,799**	**382,272**
Free Cash Flow	Raw	(379,085)	(383,162)	(385,194)	(384,632)	(382,932)
	PV	(214,661)	(208,625)	(201,664)	(193,625)	(185,355)
Bond Amortization	Balance	2,840,550	2,412,303	1,966,926	1,503,735	1,022,016
	Principal	428,247	445,377	463,192	481,719	500,988
	Interest	113,622	96,492	78,677	60,149	40,881
	Payment	541,869	541,869	541,869	541,869	541,869

Financials

Unit	Product	Measure	Year 20	Year 21	Year 22	Year 23	Year 24
Revenues	Data High						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
	Data Low						
		Subscription	971,286	971,286	971,286	971,286	971,286
		NRC	3,469	3,469	3,469	3,469	3,469
	Voice						
		Subscription	194,257	194,257	194,257	194,257	194,257
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		2,391	2,391	2,391	2,391	2,391
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	231	231	231	231	231
		TOTAL	231	231	231	231	231
	Service Install		1,734	1,734	1,734	1,734	1,734
	Customer Operations, Advertising, G&A		306,353	306,541	306,728	306,914	307,099
	Network operating expenses		315,968	316,395	316,819	317,240	317,659
	TOTAL		**626,678**	**627,292**	**627,903**	**628,511**	**629,115**
EBITDA			**542,335**	**541,720**	**541,109**	**540,502**	**539,898**
Tax Depreciation			360,748	364,662	366,875	368,644	370,792
EBIT			**181,586**	**177,058**	**174,234**	**171,857**	**169,105**
Interest			20,841	-	-	-	-
Income			**160,745**	**177,058**	**174,234**	**171,857**	**169,105**
Tax			1,929	2,125	2,091	2,062	2,029
Net Income			**158,816**	**174,933**	**172,143**	**169,795**	**167,076**

Unit	Item	Year 20	Year 21	Year 22	Year 23	Year 24
Capital	Initial Deployment	-	-	-	-	-
	Success Based	10,038	9,982	9,926	9,870	9,814
	Network Capital Replacment	369,405	366,804	364,827	363,794	363,878
	TOTAL	**379,444**	**376,786**	**374,753**	**373,664**	**373,692**
Free Cash Flow	Raw	(380,907)	162,809	164,266	164,775	164,176
	PV	(177,284)	72,861	70,685	68,177	65,317
Bond Amortization	Balance	521,028	(0)	(0)	(0)	(0)
	Principal	521,028	-	-	-	-
	Interest	20,841	-	-	-	-
	Payment	541,869	-	-	-	-

TILSON

Financials

Unit	Product	Measure	Year 25	Year 26	Year 27	Year 28	Year 29
Revenues	Data High						
		Subscription	-	-	-	-	-
		NRC	-	-	-	-	-
	Data Low						
		Subscription	971,286	971,286	971,286	971,286	971,286
		NRC	3,469	3,469	3,469	3,469	3,469
	Voice						
		Subscription	194,257	194,257	194,257	194,257	194,257
		NRC	-	-	-	-	-
Operational Costs	Voice expenses		2,391	2,391	2,391	2,391	2,391
	Customer Acquisition						
		Data High	-	-	-	-	-
		Data Low	231	231	231	231	231
		TOTAL	231	231	231	231	231
	Service Install		1,734	1,734	1,734	1,734	1,734
	Customer Operations, Advertising, G&A		307,283	307,466	307,648	307,828	308,008
	Network operating expenses		318,076	318,490	318,902	319,312	319,719
	TOTAL		**629,715**	**630,313**	**630,906**	**631,497**	**632,083**
EBITDA			**539,297**	**538,700**	**538,106**	**537,516**	**536,929**
Tax Depreciation			372,602	373,939	375,302	376,819	378,548
EBIT			**166,695**	**164,760**	**162,803**	**160,697**	**158,381**
Interest			-	-	-	-	-
Income			**166,695**	**164,760**	**162,803**	**160,697**	**158,381**
Tax			2,000	1,977	1,954	1,928	1,901
Net Income			**164,695**	**162,783**	**160,850**	**158,769**	**156,480**

Unit	Item	Year 25	Year 26	Year 27	Year 28	Year 29
Capital	Initial Deployment	-	-	-	-	-
	Success Based	9,758	9,702	9,646	9,590	9,534
	Network Capital Replacment	365,102	367,361	370,453	374,118	378,078
	TOTAL	**374,860**	**377,063**	**380,099**	**383,708**	**387,612**
Free Cash Flow	Raw	162,437	159,660	156,054	151,879	147,416
	PV	62,139	58,728	55,194	51,651	48,205
Bond Amortization	Balance	(0)	(0)	(0)	(0)	(0)
	Principal	-	-	-	-	-
	Interest	-	-	-	-	-
	Payment	-	-	-	-	-

Financials

Unit	Product	Measure		Year 30
Revenues	Data High			
		Subscription		-
		NRC		-
	Data Low			
		Subscription		971,286
		NRC		3,469
	Voice			
		Subscription		194,257
		NRC		-
Operational Costs	Voice expenses			2,391
	Customer Acquisition			
		Data High		-
		Data Low		231
		TOTAL		231
	Service Install			1,734
	Customer Operations, Advertising, G&A			308,219
	Network operating expenses			320,198
	TOTAL			**632,774**
EBITDA				**536,238**
Tax Depreciation				380,503
EBIT				**155,736**
Interest				-
Income				**155,736**
Tax				1,869
Net Income				**153,867**

Unit	Item			Year 30
Capital	Initial Deployment			-
	Success Based			11,216
	Network Capital Replacment			382,070
	TOTAL			**393,286**
Free Cash Flow	Raw			141,084
	PV			44,360
Bond Amortization	Balance			(0)
	Principal			-
	Interest			-
	Payment			-

TILSON