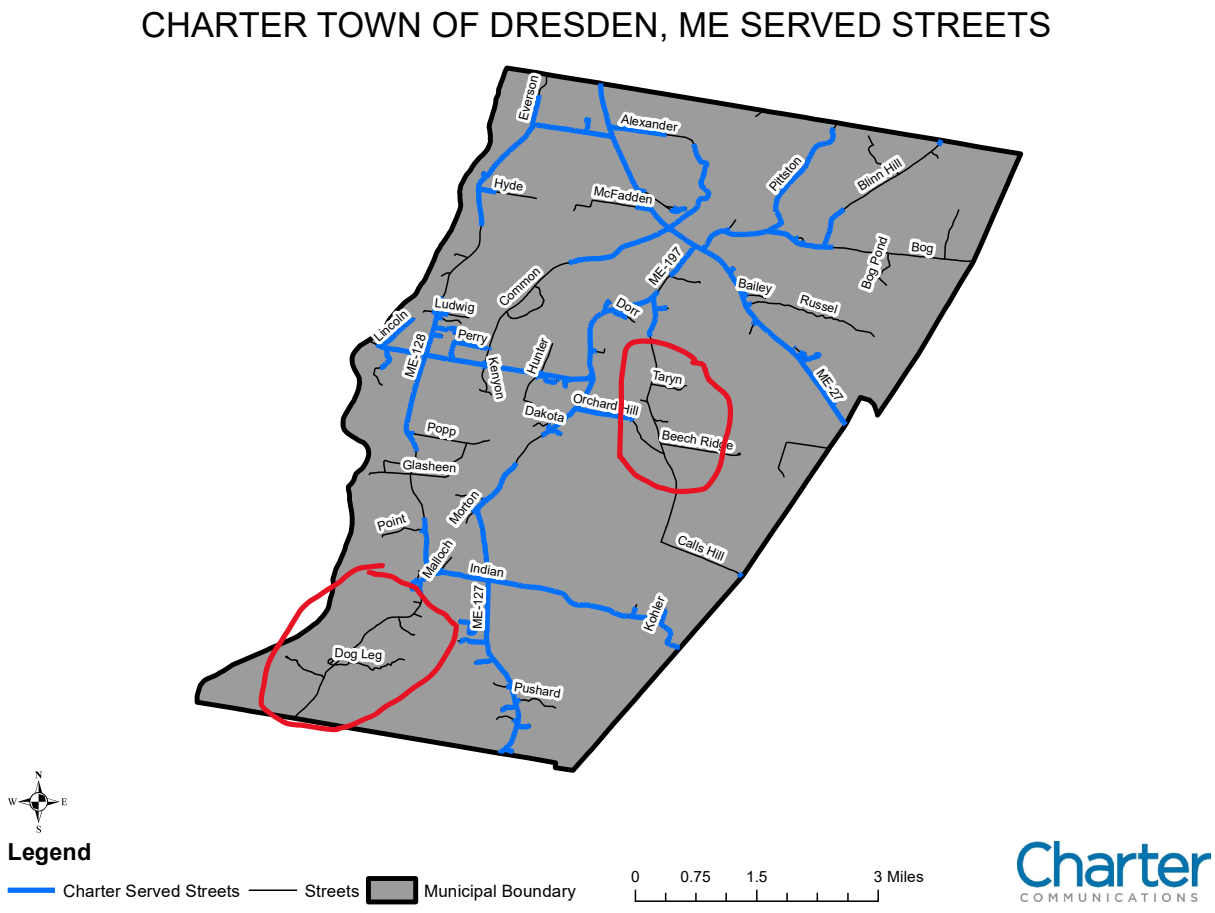
# Dresden

Dresden has several options to enhance their service, but those options depend on the appetite of the select board's goals and their willingness to participate in any solution. It's clear that those who are on the committee and don't have Spectrum (Charter Communications) want something to be done to fill in those areas that have no service or very poor service from Consolidated Communications.

### Option #1- Work with Spectrum

Spectrum serves the areas with the densest number of homes, leaving the more rural parts for other providers, mainly Consolidated Communications to serve. However, there are at least two areas where it appears that the density required (20-25 homes per mile) that Spectrum requires for buildout could be met. Pointing out these areas to Spectrum would be a positive step forward to see if the areas do indeed meet their requirements and if an opportunity to build out, at least to those areas makes sense.




The two areas circled in red seem to meet the number of homes required to have Spectrum consider building out. It's important to remember, they still may need some support from the town or a grant to help make the economics work. You can see the density of homes in the next map that provides a visual representation of E911 addresses in the community.

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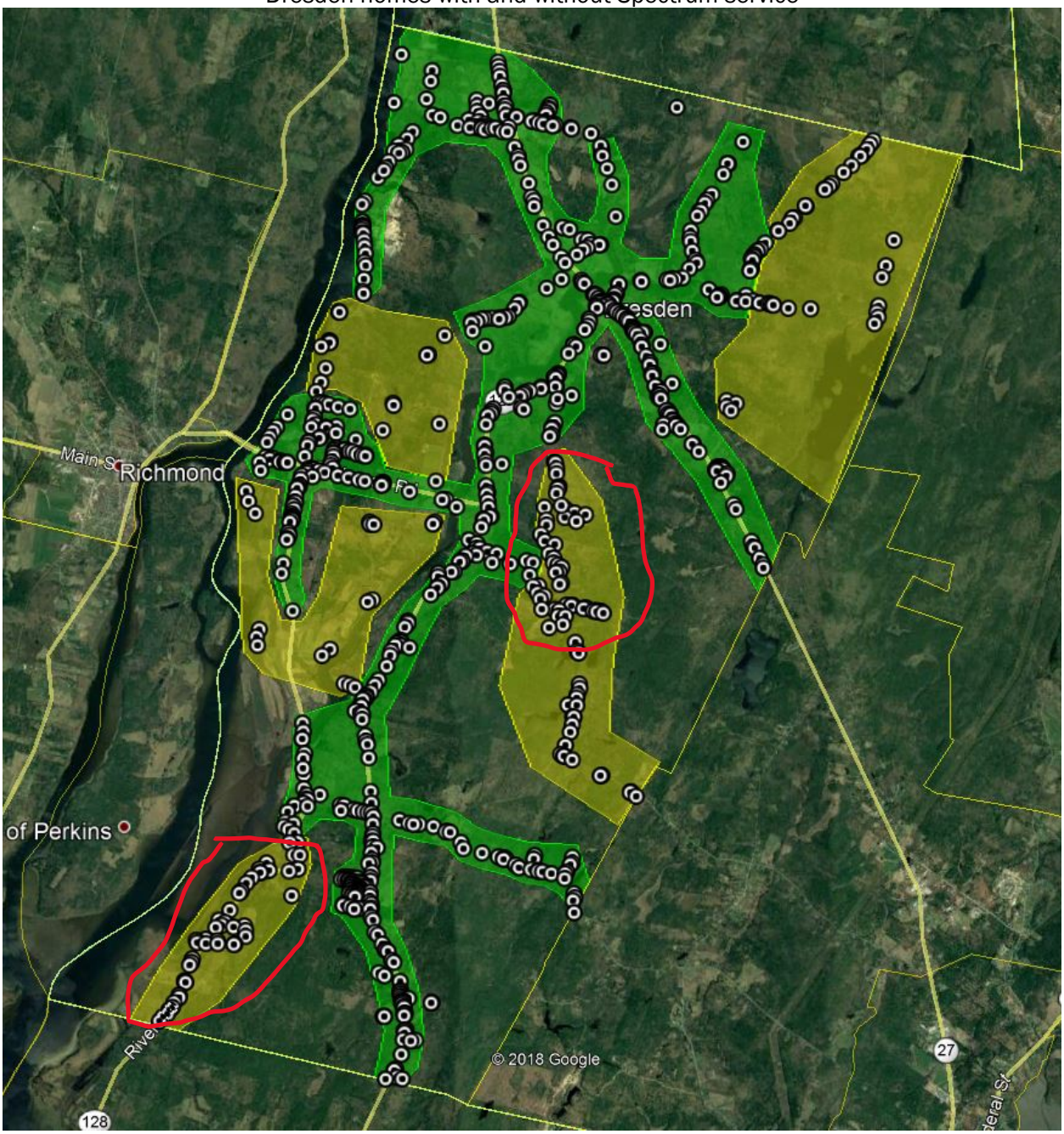
Dresden homes with and without Spectrum service




Green= areas of Spectrum service
Yellow= Areas not served by Spectrum

## Option #2- Consolidated Communications enhancements

We do not typically recommend Consolidated enhancements to their DSL service as it is unreliable and limited in upgrade possibilities. However, its likely, given the current levels of service offered by

Consolidated that they did not use federal money to increase speeds and reliability. Over the past few years, many communities have benefited from a Connect America grant that Consolidated was awarded to enhance and expand service to dozens of communities across the state. That does not appear to be the case here. If no investment by Consolidated has been made, they potentially could be interested in working with the community.

Consolidated Current service levels

| Speed/Bandwidth [Max Available] | # Locations | % available |
|---|---|---|
| 768K/3M | 93 | 9.4 |
| 7M | 123 | 12.5 |
| 10M | 145 | 14.7 |
| 20M | 59 | 6.0 |
| 25/2M | 198 | 20.1 |
| 40M | - | - |
| 60M | - | - |
| 80M | - | - |
| NS | 368 | 37.3 |
| TOTALS | 986 | 100.0 |

37% of homes (368) are not served by Consolidated. All homes that are served do not meet the federal standard of 25/3Mbps. Perhaps upgrading their equipment might expand and enhance current service. Depending on Consolidated's current equipment locations, upgrades might be possible, and relatively inexpensive (less the $75,000 per Remote Terminal upgrades where enhanced equipment would be placed).

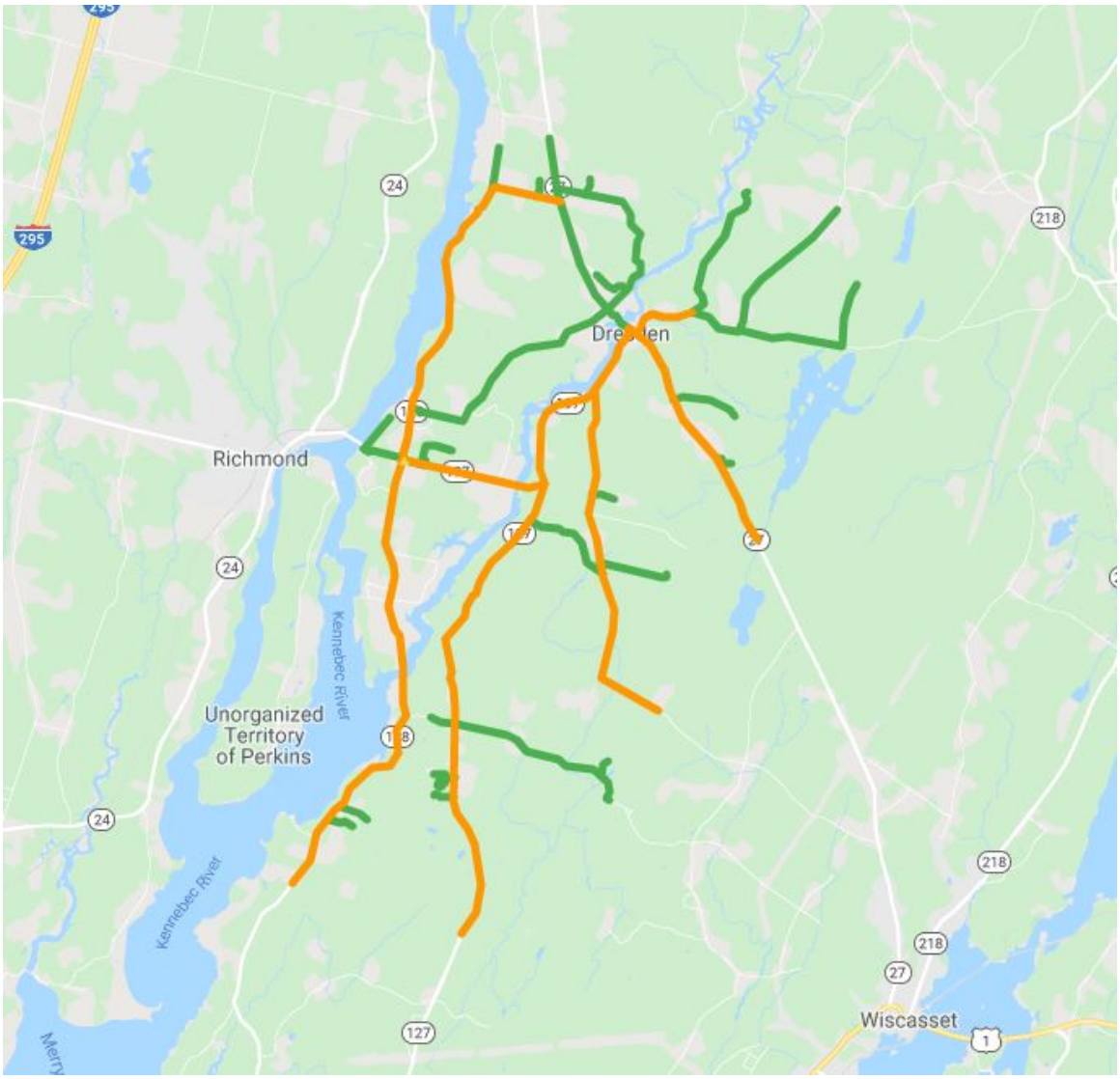
### Option #3- Full fiber build out

Given the number of homes that are underserved or not served at all, Dresden is a viable community to attract another provider to build out service to serve the whole community that would greatly increase reliability and speeds across all of Dresden. However, the cost to build such a system would need to combine public subsidy at the local, state and federal levels, along with some participation by the new provider of service.

Fiber systems meet three goals:

- Equal Access to All- no matter where you live in Dresden, you are able to receive the same level of service as anyone else in the community, regardless of your address.
- Fast and Reliable- Fiber offers the fastest speeds- by far. While at the same time giving subscribers unrivaled reliability.
- Futureproof- the system's capability can be upgraded easily without any changes or cost to the system architecture. As demand increases, the system can handle up to 1 Gig of service (1000Mbps) to each home, making the system futureproof for 20 years or more.

Fiber Routes




Orange lines= Trunk- High Count fiber lines
Green lines= Drop- Lower Count fiber lines

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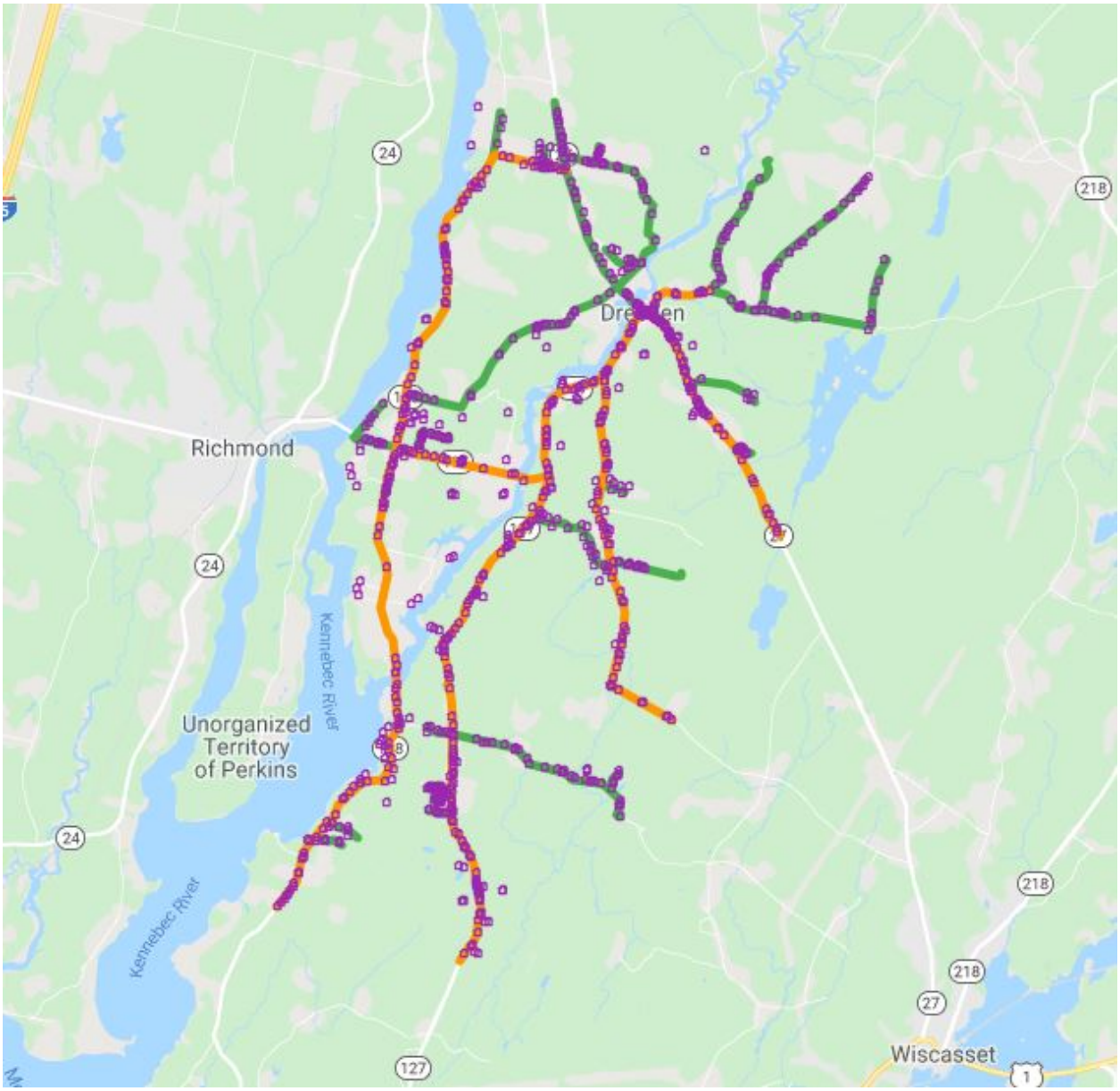
Fiber Map with E-911 addresses




Orange lines= Trunk- High Count fiber lines
Green lines= Drop- Lower Count fiber lines

This is the same fiber map with E911 addresses added to give you a good visual of the density of homes across the community. The map does not depict each connection from the fiber to the individual homes. However, we have built into our pricing model connections to every home that wants service. All homes would be capable of receiving a connection from this construction design.

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# Cost

| Category Description | | Cost |
|---|---|---|
| Materials | | $2,087,910 |
| Pole Licensing Application | | $70,842 |
| Utility Pole Make Ready | Estimate | $353,475 |
| Utility Pole Replacement | Estimate | $471,300 |
| Regen Hardware | | $291,535 |
| Customer Premise Drop Cable | Estimate | $96,360 |
| Customer Premise Installations | | $657,000 |
| | | |
| Total | | $4,028,421 |

The total cost of the budget contains several line items that may change and lower the cost of the project overall. A lot of additional costing information will be learned by proceeding with the pole licensing process. For example, we have made some assumptions based on past experience, but the true understanding of the costs associated with pole attachments and make-ready - the cost of other users of the poles moving their lines to "make-ready" a space for a new cable - only will come through the licensing process. In addition, pole replacement costs are estimated and will not be known till the pole make ready work is completed.

This budget contains the hardware for 100% of homes to be connected, however, we calculate a take rate of 40% in year one, which would reduce the up-front cost of customer premise installations by approximately $400,000. Along with other potential reductions, we would expect the cost of construction to be $4M or less.

### Breakdown of Cost Components

#### Materials
The materials line item is the total cost of all the materials and equipment needed to install the system minus the CO/Regen equipment and the Customer Drop Cable, which are located on separate line items.

#### Pole Licensing Application
This plan requires the placement of fiber optic cabling to be placed on existing utility poles across the community. In order to receive approval, a several step process of several months is required, but begins with the application. The cost of the application is based on the number of utility poles you would like to attach to.

#### Utility Pole Make-Ready
Make-Ready is the cost of making the poles ready (make ready) to accept a new fiber cable. In order to install new fiber optics cable on utility poles, a licensing process is in place that evaluates each pole for readiness to accept a new cable. Each provider (other than the electrical) would move the current lines to accommodate a space for a new cable. The cost of this process is estimated in our calculations and can change depending on the application process costs associated with each pole.

### Replacement Poles (10%)

We estimate that 10% of the poles, through the licensing process might need replacement. There are two major reasons for pole replacements. First, the amount of equipment or utility lines on a pole deem it necessary to increase the height of the current pole to allow for an additional line to be placed on it (pole too short). Or the current pole is aged to the point where it would be unsafe to place the additional line strain on the pole without a replacement pole. (aged poles). We make an estimate, but these the evaluation of each pole will take place during the pole licensing process.

### CO/Regen Hardware & Installation

CO refers to Central Office, which is a term of art that Internet Service Providers use to describe where the equipment that would be needed to power the system and where the internet would be distributed from to each home. Regen hardware is the equipment that would be used to power the internet system and control each individual connection through this central system. These costs also include a heated and cooled utility shack that would house the equipment.

### Customer Premise Cable

This is an estimated cost of the fiber to connect each home from the street to the home.

### Customer Premise Installations

These costs are associated with the equipment needed at each home. This is the cost of connection 100% of the homes.

## Revenue and Expense Model

As part of Axiom's commitment to our mission to help rural communities more fully understand what ISPs are facing serving a small community, we have created a revenue and operational expense budget that helps the community and the ISP better negotiate an operating agreement through a Public-Private Partnership, should the community choose to own the fiber network.

It's important to understand that these are just an illustration of how Axiom would envision the feasibility of operating a system and what potential customer rates could look like. The potential revenue is based on service levels and take rates that are solely Axiom projections and are intended for illustration only, each provider would have their own revenue and cost models. However, these numbers can show you generally what a provider might expect if the town were to build a new fiber system and importantly, how much capital participation, if any, might be expected from the provider.

### Revenue

| Rate Group | # of Subscribers | Monthly Rate | Annual Revenue |
|---|---|---|---|
| 25/5Mbps | 245 | $69.99 | $205,771 |
| 50/10Mbps | 70 | $79.99 | $67,192 |
| 100/20Mbps | 35 | $109.99 | $46,196 |
| Business Class-50/50M | 5 | $109.99 | $6,599 |
| | | | |
| TOTALS | 350 (40%) | | $319,158 |

- The Rate Groups and monthly cost are entirely Axiom's and may differ depending on provider
- Take-rate is the estimated number of homes we believe would take service. In Dresden's case we believe a 40% take-rate is achievable- in year one, with a steady rise as people in town convert slowly from Spectrum and Consolidated

**Expenses**

| Yearly Operating Expenses | | | Yearly Cost |
|---|---|---|---|
| Bandwidth | | | $55,728 |
| Phone Technical support | | | $4,569 |
| Administrative support | | | $2,408 |
| FC support (local) | | | $16,262 |
| FC support (Remote) | | | $101,037 |
| 5% Gross Revenue returned to Community | (negotiated amount) | | $15,958 |
| | **TOTAL** | | **$156,857** |

**Bandwidth** is the cost of bulk wholesale internet.
**Phone tech support** is the estimated cost to maintain phone support for customers for the year.
**Administrative Support** is the cost of billing/collections and support for billing questions.
**Local Field Crew** is the cost of Axiom hiring a local person to conduct simple trouble shooting at the home. Field Crew (Remote) is the cost of dispatching FC from Machias to deal with more serious issues- breakage, splicing, etc.
**Revenue return of 5%** is Axiom's commitment to give 5% of Gross revenue- $15,958/year- back to the community for the life of any contract.

Three important takeaways of this section:

◊ How critical take-rate is to the overall viability of the project (less subscribers, less opportunity for profits)- In the case of Dresden, the number of homes would be attractive to a provider
◊ The monthly operating expenses are generally fixed, no matter the number of subscribers (there is not a direct correlation between subscriber counts and expenses)
◊ The yearly profits within industry standards (50% plus)

## Final Thoughts

There are several options for Dresden to move forward- all are dependent on strong support from the select board, because all choices will require the participation (as a champion and as a financial supporter) to varying levels depending on the path forward.

- Working with Spectrum or Consolidated is the least expensive, least risky option
    - Spectrum service offers cable TV, typically our surveys show high interest in TV service, making an expansion of Spectrum more attractive potentially
    - Consolidated expansion likely comes with some enhancements to those with Consolidated service now, but DSL technology is outdated and will be difficult and expensive to scale in the future

- Installing new Fiber optic system
    - State-of-the-art system that will last for at least 20 years or very likely much longer

- Gives Dresden a competitive advantage
  - Attract new families
  - Build home-based businesses
  - Telehealth and educational opportunities
  - Options for cutting cord and cost savings on communications bill