

Dana Smith

From: Chad Sobotka
Sent: Monday, April 3, 2023 1:27 PM
To: City Council
Subject: Fw: AFN presentation at Monday's study session
Attachments: Council Questions.docx

Councilors,

Bob emailed me a list of questions regarding the AFN presentation that is scheduled tonight. Attached are the questions as well as staff answers. Please let me know if you have any other questions or comments.

Thank you,

Chad Sobotka, AFN Operations Manager



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- 1) **Competitiveness.** The staff recommendation is to upgrade from hybrid fiber-coax to 100 percent fiber to remain competitive. Would you please clarify what you mean by that?

We have two 144-count rings of fiber that run throughout town. Our current network design is "fiber to the node". At each node, the fiber converts into coaxial cable. Customers connect to AFN via this coax cable. Our goal is to replace all coax with fiber. Every home will have the ability to connect to our new all-fiber network.

- Is Charter also upgrading to 100 percent fiber and that's why we need to upgrade too? Or is AFN's current hybrid fiber-coax infrastructure and service degraded, so the \$8-10 million is more like "deferred maintenance," and we need to upgrade to catch up with Charter's hybrid fiber-coax service?

Our plant is based on DOCSIS 3.0 technology. The fastest *theoretical* download speed we can offer is 500 megabit per second (Mbps). However, the fastest download speed we can sell is 220 Mbps.

Spectrum has upgraded their cable network to DOCSIS 3.1 technology. This allows them to offer speeds up to 1 Gbps. Their slowest service plan is 300 Mbps.

We cannot compete with those speeds. With an upgrade to all-fiber, we gain two incredible advantages:

1. Fiber does not have the same issues with ingress noise. It requires less maintenance and is not prone to problems.
2. We can offer symmetrical speeds. For example, Spectrum's upload speed on their 1 Gbps service plan is only 35 Mbps. We will be able to offer 1 Gbps download *and* upload.

By upgrading AFN to all-fiber, we not only catch up with Spectrum, but we surpass them. The only way Spectrum will be able to compete with us is by converting their entire network to all fiber. The next generation of DOCSIS is 4.0. That version will support symmetrical speeds, but it maxes out at 1 Gbps. We will be able to offer 2.5 Gbps service on day 1. Even if Spectrum invests in DOCSIS 4.0, we will still be faster than them.

This upgrade to all fiber is (much needed) deferred maintenance.

- If Charter isn't upgrading to 100 percent fiber, what would it cost to upgrade AFN's hybrid fiber-coax network instead of replacing it with 100 percent fiber?

Cable modem technology operates on RF frequencies from 0 MHz up to 1200 MHz. AFN is an older plant that operates from 0 MHz up to 860 MHz. Our equipment is compatible with only DOCSIS 3.0 and not DOCSIS 3.1. Our current equipment is not

compatible with the 1200 MHz system so everything will need to be upgraded to support the latest technology.

Our cable plant has 38 nodes. Each node has four legs and each leg has five active devices. If you multiply that out (38 nodes x 4 legs x 5 actives), we will need to purchase 760 mini-bridgers and line extenders (those are the active devices). We will also need to replace every tap. We have about 2,500 taps on our network.

We anticipate it will cost \$4 to \$5 million to upgrade to DOCSIS 3.1. Even though DOCSIS 3.1 is newer, it still is prone to ingress noise.

- How should we think about competition from wireless companies preparing to offer deployment of 5G fixed wireless serving customers' internet needs as is already happening in some cities, avoiding the cost of installing fiber to the home entirely?

5G speed is still very slow. My T-Mobile iPhone has had a 5G signal in Ashland for years. The 5G service that competes with fiber is called millimeter wave. The theoretical maximum speed of millimeter wave is 3 Gbps and the range is incredibly short. Cell companies will need 3 to 4 cell towers per city block. And if there are multiple cell providers, each company will need their own tower. The cost to deploy 5G millimeter wave is astronomical. Cell phone providers know they cannot compete with fiber. They will not invest in millimeter wave in Ashland if we deploy our fiber first.

2) **Market share.** The table with revenue forecasts on page 9 reports almost 4,200 customers representing just 35 percent market share.

- How many homes and businesses are connected to AFN's hybrid fiber-coax infrastructure but are not AFN customers? What have been AFN's annual customer counts over the last five years compared with Charter's customer counts?

According to City staff, there are "12,091 buildings mapped which includes every home, store, restaurant, chicken coop and dog house that we are aware of and can see on highly detailed air photos". There are 10,932 residential addresses and 1,113 commercial addresses.

We estimate that 500 to 800 buildings cannot connect to AFN (your house being one of them). That means about 7,000 buildings have the ability to connect to AFN but choose not to.

I don't have any customer data on Spectrum. I assume they follow our customer graph. I have included detailed customer count graphs at the end of this document.

- How many homes and businesses are not currently reachable by AFN hybrid fiber-coax and would need to be connected to the network in order to subscribe? That's the case with my house, even though my neighbors are AFN customers.

We estimate 500 – 800 buildings are not connected to AFN.

Non-serviceable addresses fall into two categories:

1. Those that require trenching. An example is Piedmont Drive. When AFN was constructed, running underground conduit required cutting a foot wide trench in the street. Today we can micro-trench. This is basically cutting a slit in the pavement, running the fiber through it, and covering it back up. The cost to micro-trench is less expensive than trenching.
2. Those that don't have conduit to their home, but we have conduit along the street. An example would be the townhomes on Ravenwood. We can service the townhomes along Vista St but not those on the interior. Spectrum has conduit to the internal townhomes but AFN doesn't. If we receive permission from the landowner, we can use Spectrum's conduit. As a side note, this is what Hunter did when my sister signed up for their fiber service. She lives on a flag lot in Phoenix and Hunter used Spectrum's conduit to connect her house.

If you send me your address, I can let you know which category you fall into.

- The same table projects an increase to almost 5,400 customers for almost 45 percent market share by 2034. What are the assumptions behind the annual growth projections that start off slowly at 1 percent annually, increase to 3 percent and then 6 percent for a few years, and then drop back down to about 1 percent annually for the last five years? What would drive this take rate? What constrains it from being higher?

We anticipate a surge in customers as we deploy fiber. Customer growth is directly related to how fast we can deploy the all-fiber network. The conservative model shows a peak customer acquisition in 2028 & 2029. The assertive model shows peak acquisition in 2027 & 2028. Those years indicate when we will be most active with our construction. When construction is completed, customer acquisition slows down.

The acquisition rate will depend on how excited the community is for GPON. One idea we had is to create a form to indicate that your household would like GPON. Once enough neighbors sign up, we would prioritize that neighborhood. This will hopefully drive word-of-mouth as neighbors discuss signing up.

I believe my projections are very conservative, even with the assertive model. I believe it is a reasonable expectation to achieve 70% market share in 10 years.

3) **Value proposition.** The "fiscal impacts" in the staff report seem more like a quantification of the value proposition for Ashland taxpayers, since they mostly don't affect the City's finances, except the one for City operations, as discussed below:

- **City operations:** 47 strands of fiber and the DIA circuit with an estimated annual value of \$243,600 - \$531,600 but provided to the City for just \$60,000.

Does the City need all the services described, and is the value range you cite what the City would have to pay to a different provider if AFN weren't available?

The City uses a lot of fiber. I discussed fiber with the water treatment manager at the City of Medford. He was discussing the problem he is facing because he needs a network connections to devices around Medford. I told him that in Ashland, departments ask for fiber and we provide it and we don't charge them a monthly fee.

If the City did not use fiber, they would need an alternative connection. Some of the connections require fiber because of network traffic for computers and phones, such as the City buildings. Others require fiber because it is very reliable, such as the wastewater pumpstations. For the electric department, a few of their SCADA devices still use cable modems, but we are upgrading them to fiber because of the need for guaranteed reliability.

It is easy to compare AFN's cable modem services with Spectrum because we both advertise price and speed. It is very difficult to find fiber pricing. Hunter and Spectrum both do not advertise prices. Pricing depends on how much construction is needed, the time length of the contract, and what type of service is needed (dark, lit, or internet).

I asked various government agencies around the valley what they are paying for service. Based on the information I received, I feel that my estimate of \$243,600 to \$531,600 is accurate. That represents the value of the fiber services we provide the City and is what another provider would charge.

I assume the City of Medford does not pay for all fiber services they use under Spectrum and Hunter. It is standard language to deduct services provided from franchise fees.

To what extent are City operations served now by 100 percent fiber vs hybrid fiber-coax? The table at the bottom of page 5 suggests that City operations may already have 100 percent fiber. To what extent do City operations currently served with hybrid fiber-coax need to be upgraded to 100 percent fiber?

There are a handful of City sites that use a cable modem. There are three SCADA electric sites (that will be converted to fiber), the Police contact station in the plaza, and the golf course maintenance shop.

The table at the bottom of page 7 also mentions that AFN pays the City another \$584,170 for central services, use of facilities, and fleet maintenance, but isn't that chargeback based on actual cost of services AFN receives from the City? Or are you saying the City makes a "profit" in its chargeback methodology?

AFN does not use \$584,170 worth of City services each year. The actual number is hard to quantify. The bottom line is, if AFN were spun off, there would be a deficit in the budget.

- **Ashland School District:** service valued at \$133,800 - \$225,600 annually, for which ASD pays only \$12,000. That's a pretty steep discount! What's the basis for this pricing, and has it changed over the years?

It has not changed in a number of years. Later this year I will be increasing their monthly charge to \$1,500 because they are now using two racks in our head-end and we recently connected a few more sites to the fiber network. It is an incredibly good deal for them!

- **418 local businesses:** total savings vs Spectrum valued at \$75,904 - \$127,009. Why is this something Ashland taxpayers should pay for? Presumably, this also applies to residential customers. What are the benefits to 100 percent fiber vs hybrid fiber-coax for residential and business customers? If 100 percent fiber is worth more for these private customers, should they pay more for the service than they're currently paying for hybrid fiber-coax?

By providing fast service for a lower price, we make it easier to do business in Ashland, and the more businesses we have in Ashland, the more vibrant our town will become.

We just signed up a film studio in downtown Ashland that needed to upload 4k films. Spectrum's faster upload was still too slow for them. We utilized a new technology called G.hn which allows us to connect a building to fiber, but it uses coax to connect the customer (which reduces the deployment cost). The speed tops out at 800 Mbps to 1 Gbps. They are incredibly grateful for our service and speed!

Many customers are motivated by price. If they have \$50/month cable modem service and I offer them fiber for \$65/month, most of them will not switch. It doesn't matter if

the speed is faster and more reliable. Users have switched to Spectrum because their introductory rate is \$10 cheaper.

I also am a firm believer in quality internet and reasonable prices. We are not profit motivated.

4) **Pilot project.** Only option 1 calls for a two-year pilot project to test the approach, but I'm not sure of the purpose of the pilot project or what we might decide to do differently as a result.

- Is the proposal to start with a pilot project driven by operational or financial considerations? Why are you suggesting a pilot for option 1 but not for options 2 and 3?

Only Option 1 has a pilot project because Options 2 & 3 require bringing in a private partner. No private partner will agree on a 2 year pilot project because they need a return on their investment. Options 2 & 3 will require long term contracts. The minimum contract will be 10 years. Option 3 may require a longer term contract (20+ years).

The purpose of the pilot project is to verify our business model. The pilot project is low risk ("only" \$1 million) and it will prove or disprove our forecasts. It is driven by both operational and financial considerations.

- I'm puzzled by the strategy of deploying the pilot project in a wide variety of neighborhoods and how this would allow you to "estimate take rates." How will you define which neighborhoods can participate?

We have selected an assortment of neighborhoods:

- Granite St: more affluent
- Quiet Village: working families
- Lower Iowa/Avery/Bridge/Garfied/Wightman: college students
- Middle Clay St/Takelma/Jaquelyn/Grizzly: middle class

Each neighborhood represents a different demographic. We will have metrics on initial take rates and we will hopefully learn how to properly advertise to each demographic.

Is the plan to replace coax with fiber in every building in the pilot neighborhoods, so the "take rate" would be the percentage of connections that take AFN service? Or is the plan to replace coax with fiber only for current AFN customers plus new customers, so the "take rate" would be the new customers acquired? Would residences like mine that don't yet have an AFN cable connection be eligible to participate in the pilot?

Every building in the pilot project will have the ability to connect to our fiber network. If they don't want to switch, we will not run fiber. They will have the ability to switch at a later date. The "take rate" is the percentage of customers who sign up for fiber service (this includes existing customers).

Each neighborhood will have a maximum of 256 customers. 35% of the customers are already AFN customers (87 of the 256). That leaves roughly 169 Spectrum and Century Link customers. If we can convert 30% of those customers to switch to AFN (an additional 50), I will consider the pilot a terrific success. That would give us a take rate of about 50%. Here are the numbers:

- Total number of possible fiber customers in one neighborhood: 256
- Number of AFN cable modem customers: 87 (34%)
- Number of non-AFN customers (Spectrum & Century Link): 169 (66%)
- Target number of fiber customers: 137 (53%)

For this pilot project, we will not undertake construction to connect locations that cannot sign up for service. The master plan is to ensure that every building in Ashland has the ability to connect to AFN.

What minimum "take rate" would you consider a "success" in order to expand expansion to the rest of the city? What happens if fiber is available but customers prefer to stay on coax? What's the plan for cable TV customers? How many cable TV customers are there?

If we can achieve 40% take rate within two years, I would consider that a success. In my example above (256 customers), we would need to sign up about 30 new customers in each neighborhood of the pilot program.

- If the pilot project would serve a maximum of 1024 homes and businesses over two years at a cost of about \$1 million, is it realistic to serve "every building in Ashland" in just 1-2 additional years spending an additional \$7-9 million (the \$8-10m you've estimated less the \$1m that would be spent in the first two years)?

Estimating projects is incredibly difficult, especially these past few years. I believe I have adequately padded our estimate and feel confident that if the pilot project is successful, we can expand the network for an additional \$7 to \$9 million.

One of the goals of the pilot project is to gauge our financial estimates. Once the pilot project is completed, we will evaluate the results and make the appropriate recommendations. We will also update our business model.

5) **Connecting every building.** Option 1 suggests connecting "every building in Ashland" to an all-fiber network. Perhaps I'm being too literal, but I'm puzzled by what this means in numbers and also how it relates to market share.

- The table with revenue forecasts on page 9 reports nearly 4,300 AFN's representing about 35% market share, which would mean a total market of about 12,000 customers. Is that what's meant by "connecting every building?" Is the plan to connect every building regardless of whether or not the resident or business decides to pay for the service so AFN can "compete" immediately with other service providers by encouraging them switch providers?

Yes, there are roughly 12,000 buildings in Ashland. Our goal is to ensure that every building has the ability to connect to our fiber network. For example, we are deploying GPON fiber to the new sub-division being built on N Mountain Ave (Beach Creek). Each house will have a fiber connection once construction is completed. They may choose not to use us, but they will still have a fiber connection in their house. This is unique because it is new construction.

For our pilot project, if someone doesn't want our fiber, we aren't going to force a connection on them. We will leave a spot open for them but we won't run fiber to their house. We will absolutely make sure that they have the ability to connect to us if they decide to switch at a later date.

- The two tables supporting option 2 suggest a customer count of 8,000. Is this what's meant by "connecting every building?" Or does it reflect expected market share?

Under Option 2 (and Option 3), our private partner would be responsible for deploying fiber throughout Ashland. The table under Option 2 refers to the market share.

- The revenue forecasts table projects about 5,400 customers for 45 percent market share by 2034. Why is this so far short of the 8,000 customers projected for option 2?

I am trying to be as conservative as possible for Option 1. I believe our market share will be much higher than our estimates. For Option 2, I assumed our private partner would require a higher market share for a timely payback on their investment. There are many details that will need to be negotiated under Options 2 and 3.

6) **Financing and cost sharing.** The staff report says "funding sources will need to be identified before proceeding." Can you give me a preview of your thinking?

- [The City's open.gov up-to-date financials](#) suggest that in the last fiscal year, AFN took in about \$2.7 million in revenues for about \$2.2 million in expenses (including about \$500,000 in debt service) for net income of about \$500,000. Revenues have been growing faster than expenses over the last few years, which has resulted in an increase in ending fund balance, budgeted at \$2.1 million at the end of FY 2023, but likely to grow to about \$2.6 million by June 30. Is this available for capital investment or to leverage cost-sharing from other sources?

[This question would be best answered by Joe and Sabrina.](#)

- The 2022 audited financial statements show outstanding AFN debt (at the end of June 2022) from a 2013 General Obligation Bond of about \$3.6 million, to be retired entirely in payments of about \$1.2 million annually in 2023, 2024, and 2025. Have I got that right? It looks like the City covers the difference between the \$1.2 million debt service for the bond and AFN's \$500,000 contribution for debt service, which I suppose is what allows AFN to generate about \$500,000 surplus for the last few years. Is that right?

[Yes, that sounds correct. The last debt payment should be in fiscal year 2025 \(July 1, 2024\). The debt is split between various departments. Streets pays for 2%, Water pays for 6%, Wastewater pays for 8%, AFN pays for 41%, and Electric pays for 43%.](#)

[Tonight we will discuss an option to approximately continue that split. In the new model, the split will be 8% Water, 8% Wastewater, 35% Electric, and 50% AFN. The dollar amount each department pays will decrease. The rationale is for each department to help pay for their share of the fiber network that they use.](#)

- Why has AFN retained surplus earnings to accumulate a large and growing fund balance (\$2 million at the end of June 2022) rather than use those funds to increase service connections and upgrade the network?

[I have been advocating for a fiber pilot project for the past 6 years. Unfortunately, this question would be best answered by previous administrators.](#)

- The staff report doesn't mention charging customers anything for the upgrade. Is the intention to charge customers for the residential router mentioned in options 1 and 2? How about the \$5 or \$10 monthly payment per customer in option 2? Or is the idea to continue to be the lowest cost provider regardless?

We will not charge customers for upgrading them to fiber. We need to keep customer costs as low as possible. We also will be providing customers with residential home routers, which we can remotely troubleshoot. These routers will be optional.

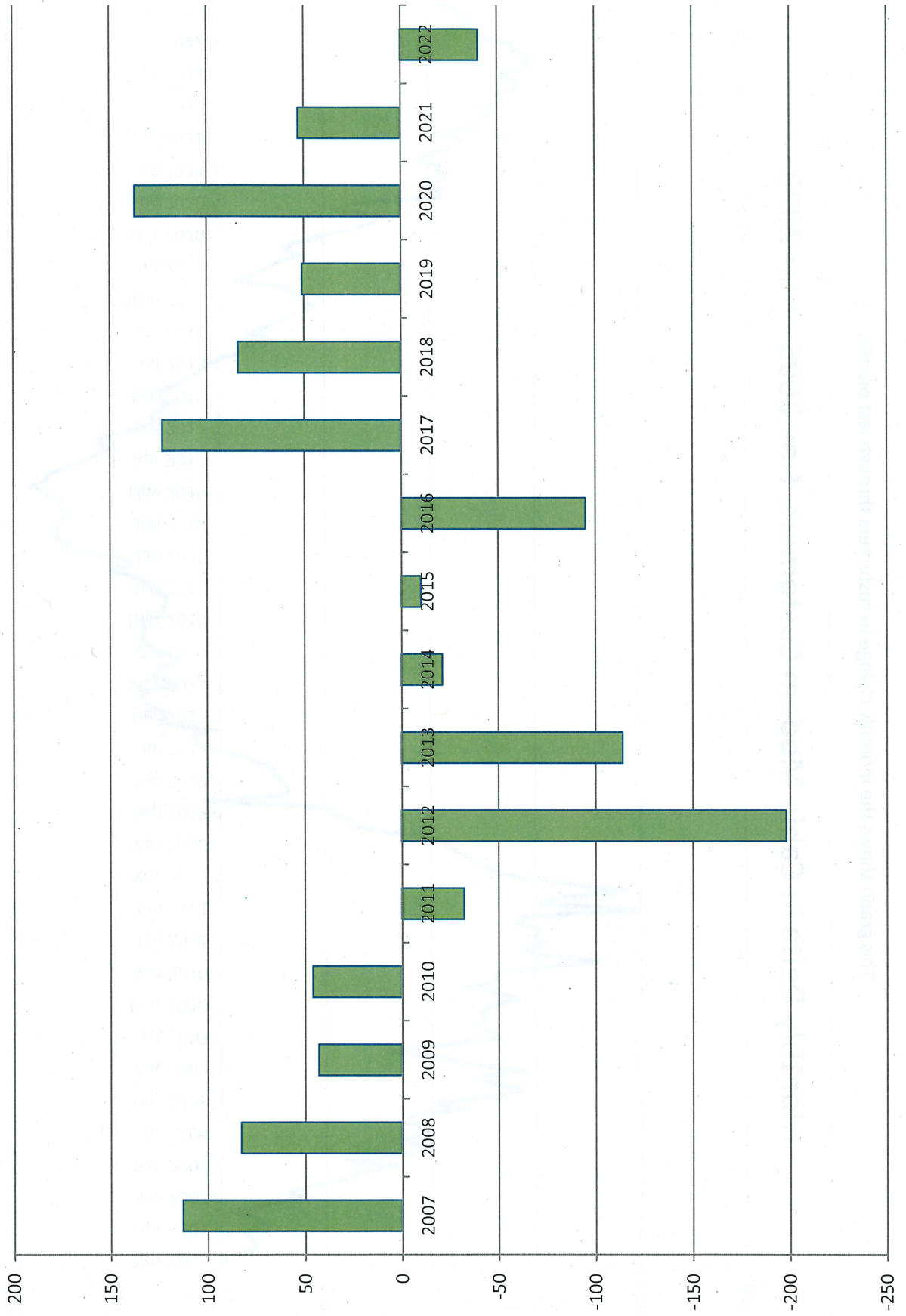
We may offer additional services at a monthly cost, such as whole house security and parental controls. One router we looked at offered an intrusion detection feature. By measuring wireless signal strength, it could detect when a person was in the house.

- What other sources of financing or cost sharing are you contemplating?

This is best answered by Joe and Sabrina.

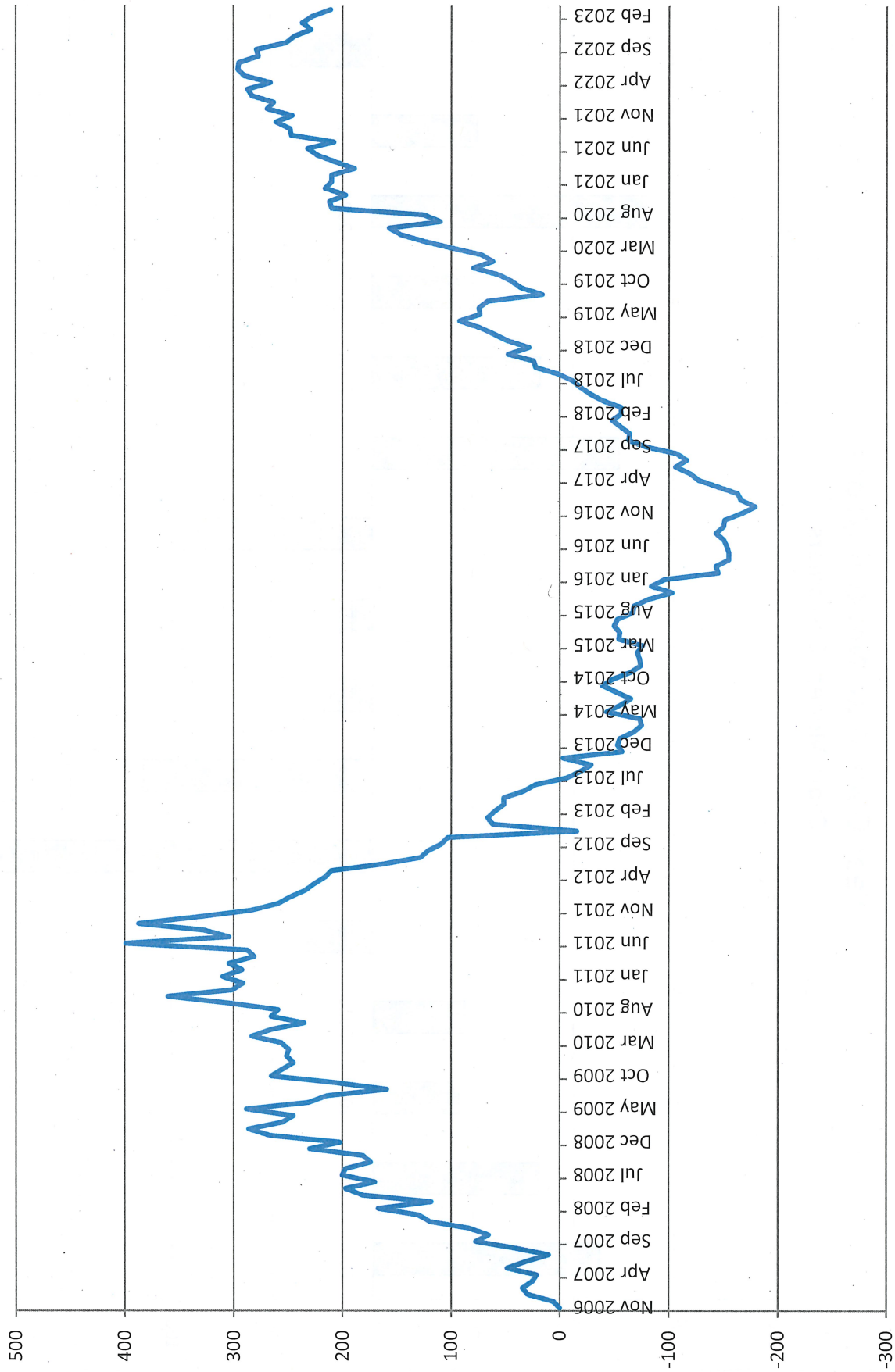
This graph shows the net gain or loss by year from 2007 to 2022.

Year Over Year, Net Gain/Loss Cable Modem Customers



This graph shows the monthly change in customers through last month:

Monthly Delta in Cable Modem Customers, Nov 2006 - Mar 2023



This graph shows the actual cable modem customer count based on the 15th of each month.

