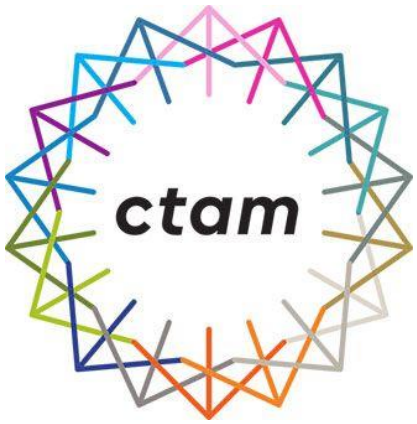
# MARKETING & SALES INTEREST GROUPS

2022 Initiatives



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# 2022 INTEREST GROUPS

1

## MOBILE AWARENESS

Objective: Support and position our members growing mobile businesses using paid digital media

2

## COMPETITION & RETENTION

Objective: Establish best practices to position cable broadband vs. key competitors including Fiber, 5G Home Internet and Mobile Substitution

3

## ACP / RURAL & LOW-INCOME BROADBAND

Objective: Help the industry better understand how to market to the low income and rural markets by producing curated best practices, marketing examples and research on the customer segments

4

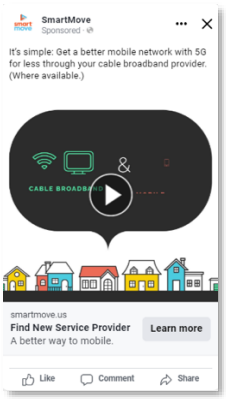
## SALES LEADERSHIP

Objective: Identify and discuss current challenges and opportunities across sales channels, and share best practices

## 1 Mobile Awareness (formerly Convergence)

CTAM launched an awareness campaign to support and position our members' growing mobile businesses using paid digital media. CTAM has a unique scaled digital audience of movers, who are twice as likely to switch mobile providers during the year they move than non-movers -with 70% of those switches happening in the two months around the move.

Extensive in-market copy and creative testing and optimizing around engagement:






Progress in 2022

- Campaign launched in late August and will run through the year and into 2023
- $250K digital media buy on paid social scheduled through year-end
- 2.7 million impressions in the first 6 weeks
- Reaching 50% of the target audience 9+ times per month for $.07 each
- Expect to reach 12 million impressions by year-end

**2022 Participants**

1. Altice – Graziella Drahi
2. Armstrong – Peter Grewar
3. Charter - Claire Avery
4. Charter – David Gray
5. Cox – Betty Jo Roberts
6. Cox - Catherine Borda de Castro
7. Cox – Jodi Muller-Stotser
8. Comcast – Morgan Daloisio
9. Comcast - Mike Gatzke
10. GCI – Stephanie Lovett
11. Mediacom – Dianne Schanne
12. Rogers – Mustafa Zileli
13. Shaw – Alex Martin
14. Shaw - Colin McWhinnie

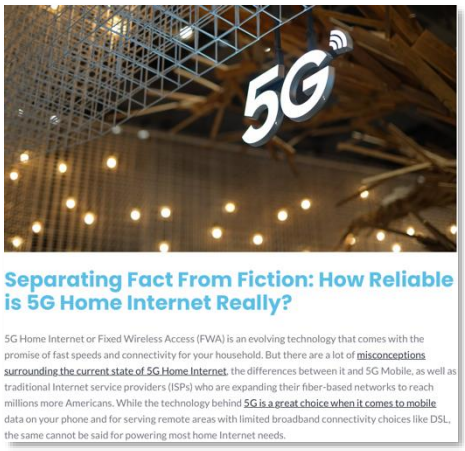
## 2 Competition and Retention

The competitive focus is on Fiber, 5G Home Internet, and Mobile Substitution threats by:

- Defining the threats and the angles of attack they take in their marketing
- Establishing best practices to position Cable Broadband vs. these competitors
- Documenting best practices for keeping and growing customer relationships

Progress in 2022:

- Conducted broadband perception and sentiment analysis research to uncover potential competitive positioning statements vs. Fiber and 5G Home Internet – shared broadly in August across most MSO working groups
- Quantitative work on broadband vs. Fiber is wrapping up and 5G is in the field in Q4
- Launched the factsabout5g.com site in September to give consumers a place to sort fact from fiction about this new service
- In Q4/Q1, developing a broadband positioning strategy for Fiber and 5G Home Internet to engage consumers on the facts about our industry's incredible network and services




**2022 Participants**

1. Altice – Andre Martineau
2. Altice - Helene Pandal
3. Altice – Jen Murphy Packer
4. Altice – Graziella Drahi
5. Altice - Scott Meador
6. Cable One – David Ballew
7. Cable One – Isabelle Jazo
8. Charter – David Gray
9. Charter – Kathleen Griffin
10. Charter – Roseanne Underwood
11. Charter – Tamara Bowens
12. Charter – Dave Lampman
13. Comcast – Dina Pappas
14. Comcast – Eileen Diskin
15. Comcast - Ginny Too
16. Comcast – John Hewson
17. Comcast – Ken Flynn
18. Comcast – Pooja Kapadia
19. Comcast – Sarah New
20. Comcast - Stephanie Pearlman
21. Cox - Bruce Berkinshaw
22. Cox – Anthony Deflippino
23. Cox – Kristine Faulkner
24. Cox – Tony Maldonado
25. Cox – Wendy Rosen
26. Mediacom – Dianne Schanne
27. Mediacom – Eric Schoenfeldt
28. Rogers – Chris Smale
29. Rogers – Sameer Sheth
30. Shaw – Dan Sumner
31. Shaw – Karin Borgersen
32. Sparklight – Nanci Campbell

## 2 5G Internet Messaging Group

In 2022, the 5G Working Group was formed to discuss how each MSO is handling 5G Home Internet positioning and messaging. The group shared how they are each approaching the new competitive threat and asked CTAM to develop stand-alone assets to help push back. CTAM quickly developed and launched a new website (factsabout5g.com) that sets the record straight on what 5G Home Internet is and what it is not. This site's goal is to appear in organic search results and not leave the space totally to T-Mobile and Verizon. CTAM has since launched a second site (5GHomeInternetReviews.com) which we expect to drive more consumer traffic. This new site aligns with how consumers actually look for information about 5G Home Internet and includes real reviews of the service from influencers and cautionary tales from real consumers on Reddit, Twitter and other social media. Research indicates that traffic for review sites is 8.5x greater than for facts only sites.

## 3 ACP/ Rural and Low-Income Broadband Working Group

In support of the industry's ACP efforts, CTAM launched a national digital media and print/radio/digital newspaper campaign to reach Americans who may benefit from the program, position our member companies as partners to help them connect, and direct them to member learn more pages, buy flows and/or call centers to sign up for service.

Progress in 2022:

- Digital media campaign has reached 2.7 million consumers via paid search and targeted display yielding 40K leads to member companies
- Print/radio/digital newspaper awareness campaign picked up by 1,400 newspapers and more than 40 radio stations reaching 203 of the top 300 media markets across the U.S.


**2022 ACP Participants**

1. Altice – Audrey Pinn
2. Altice – Dam Johnson
3. Altice – Prasanna Thoguluva Santharam
4. Armstrong – Dave Wittmann
5. Atlantic – Paul Sheridan
6. Atlantic – Andy Walton
7. Charter – David Andreski
8. Charter – Jennifer Ingram
9. Comcast – Alejandro Solorio
10. Comcast – Stephanie Pearlman
11. Comcast – Ken Flynn
12. Cox – Ilene Albert
13. GCI – Stephanie Lovett
14. MCTV – Katherine Gessner
15. Mediacom – Chris Lord
16. Mediacom – Carolina Escobar Paredes
17. Sparklight – Varn Chavez

**2022 Rural and Low-Income Broadband Participants**

1. Altice – Dan Johnson
2. Altice – Prasanna Thoguluva Santharam
3. Armstrong – Andrea Lucas
4. Charter – Jen Rocco
5. Charter – Meghan Dering
6. Charter – Zoe Santo
7. Cox – Ilene Albert
8. Cox – Joel Frost
9. MCTV – Elizabeth Kwolek
10. Mediacom – Chris Lord

## 4 Sales Leadership

For 2022, the group pivoted from channel-specific working groups to quarterly Sales Leadership check-ins. The objective has been to identify and discuss current challenges and opportunities across sales channels and discuss best practices, with channel calls as requested. A sales leadership roster is also maintained and published for networking.

The first quarter was marked by discussions on ACP initiatives and operational approaches by MSO; the group also discussed their individual benchmarks for call center conversion rates. One-on-one meetings were held in Q2 with CTAM, and findings were distributed to all participants. Recurring themes included chasing connects, but also recruiting challenges and mitigating strategies, navigating changing seasonality, identifying optimal future sales channels, and the growing competitive presence.

The Q3 call focused on training and coaching in hybrid word environments, as well as new approaches to compensation and incentives, along with best practices in scripting/routing of customer calls. There is one more call this year and the group will determine topics.

**2022 Participants**

1. Altice – Dan Ferrara
2. Armstrong – Peter Grewar
3. Cable One – Jim Obermeyer
4. Charter – Christian Ruiz
5. Comcast – Jenny Hartey
6. Cox – Boone Hand
7. Cox – Sheila Hicks
8. Mediacom – David McNaughton
9. Rogers – Ali Bahrami
10. Shaw – Pat Button

## 1 Mobile Awareness (formerly Convergence)

# Call Notes: March 17, 2022
# Subject: CTAM Convergence Team Kickoff Call

### Welcome/Roll Call

Call Attendees:

Charter – Claire Avery
Charter – David Gray
Cox – Catherine Borda de Castro
Comcast – Morgan Daloisio
Mediacom – Dianne Schanne
CTAM – Mark Snow, Deepa Venkataraman + Renee Harris

### 2021 Review + Looking into 2022

Convergence is defined as a semi-aspirational concept that has three discrete stages:

1. Financial – the price/value notion associated with traditional "1.0" bundling.
2. Managerial – combining things like broadband, home automation, mobile, etc., can be made easier working with one provider.
3. Experiential – the most powerful: a UX where the boundaries between traditional products blurs or vanishes in terms of features, common navigation/UX; done well and the notion of removing one part seems counterintuitive – it's a BRAND X experience, not a product A + product B experience.

Convergence has connectivity at the Center:

- Connectivity includes broadband, in-home Wi-Fi, IoT control tools, out-of-home Wi-Fi hotspots, as well as Mobile (broadband and voice)
- Things like TV and local phone and home security, etc., are all extensions and made possible/better by this core of connectivity
- From the customer perspective, the aspirational endgame creates a contiguous UX experience such that the lines between products blurs or even disappears

Questions as we go forward:

To what extent can CTAM help with messaging to consumers but also perhaps to trade press and other influencers and the industry analysts? We have a chance to "own" the concept of convergence as a game changing pivot from price/value bundles.

How does the industry take the next step in positioning/messaging converged offerings?

How do we collectively and individually highlight the benefit of Internet + Mobile w/5G together that not only yields a powerful savings message, but also sends a compelling message around the notion that the two are really one thoughtfully designed experience where they work better together?

Group Discussion

Comcast

Comcast notes MSOs need assistance in educating consumers and building awareness that MSOs offer cell phone service. Comcast believes this foundation is needed before talks of high-level benefits can occur. While Comcast has been in the mobile business for quite some time, their awareness is very low. Comcast notes that they can do the heavy lifting of putting strong value proposition, pricing, experiences but it is uphill battle if consumers do not know they offer cell service and that the service is offered on the best wireless network in the country. If CTAM can help MSOs join together to educate consumers on these facts (not brand specific) it would be very helpful for all MSOs.

Mediacom

Mediacom does not have a mobile product but believes a messaging strategy to build awareness for MSOs for MSOs that do offer mobile also would be very helpful. -- for Mediacom, it would help to position their home internet/Wi-Fi service versus 5G and feels it would nicely correspond into a wireless conversation. For Mediacom the benefit would be about the superiority of MSO solutions for home internet. CTAM notes that a key discussion of the CTAM Competition + Retention Working group will be to continue to position home internet vs mobile substitution 5G as well as fixed wireless broadband.

Cox

Cox agrees, having not launched their wireless product yet, that it is an absolute must that understanding, and awareness must be established regarding mobile service offerings. Cox has seen in research that consumers are highly confused with mobile offerings.

Cox agrees with the definition of convergence provided but they label it slightly differently - Marketing, Product, Operations and Network – are their four domains of Convergence.

It would be very helpful for Cox to continue to work with this group – bringing the MSOs together through calls or working sessions to leverage knowledge of strategic and/or research findings regarding wireless awareness.

Charter

Charter also agrees that awareness is key. Charter feels having a clear and coherent industry message is in the best interest of all MSOs.

## Screen Video for SmartMove Website

CTAM shared a video created for use on SmartMove.us that will assist consumers in understanding the benefits of bundling their mobile service with their broadband provider.

Comcast

Comcast appreciates that the video is clear in that it is talking about mobile devices and the combination of the networks working together. However, Comcast also notes there may be some language included that many consumers may not understand. Comcast also notes the story should be simplified for an initial introductory video to be more consumer friendly and include a repetitive message. The video as it stands now could be used as a phase 2, more in depth explanatory, video.

Cox

Cox notes that if the benefit in the video is about cost savings, the video doesn't mention that until towards the end - it should be mentioned earlier in the video. In research, Cox has found that when talking about the two networks working together or session continuity, consumers have said that they already have this with Wi-Fi connected automatically, so it wasn't a need to them. If the video is about explaining how to leverage home fixed internet, that didn't come through in the video; Cox is not sure how consumers would understand how they are saving.

Cox also agrees with Comcast in that an initial introductory video to mobile products should be simplified and to the point and that this video could be used as a "chapter 2" to the initial video.

## Objective for 2022

Based on the call, the new objective for this group will be to have CTAM help drive awareness for member mobile offerings first, followed by a focus on the converged Broadband + Mobile/5G bundle.

## Research – Executive Summary

Mark reviewed the attached executive summary from the most recent HarrisX overnight poll done in mid-February 2022 which addressed getting Mobile from an Internet provider.

Highlights include:

- Nearly half of households with home internet would be interested in a converged bundle
- Streaming services are important among those consumers interested in a broadband + mobile bundle.
- About 14% of households with internet have a converged bundle
- Those interested in bundling are more likely to want to add mobile to their broadband service than the other way around.

CTAM will send the full deck to the group in coming days as well as to the CTAM MSO Research Working Group.

Group Discussion

Comcast noted that with regards to the streaming question, there is a constant buzz in trying to understand what the true value of streaming is. Comcast is not sure that streaming offers actually cause consumers to switch.

Comcast also notes that the handset subsidy part noted in the summary is confusing as it is opposite to research, they have done.

CTAM offered to compare research findings with MSOs to sort out potential differences or areas of conflicting findings.

## Next Steps/Call Cadence

The group decided on calls every two weeks initially and possibly moving to a cadence of every other month to track progress.

CTAM will poll the group to find the best day/time for the next call.

## Presentation: *Convergence Working Group March 17, 2022*


### Executive Summary of Research – Fresh from the Field

**Substantial market opportunity for 'converged' bundles; MSOs have the advantage**

- Nearly half of households with home internet would be interested in a 'converged'* bundle with their home internet provider. That figure includes 'converged bundlers' - those that already subscribe to such a bundle.
- While discounts on combined services will be very important to offer, high internet speeds, streaming services will also be very important as sweeteners to create a bundle or switch to a different provider.

**Converged Bundlers are fewer, but sold on the bundle already**

- About 14% of households with home internet have a 'converged' bundle with at least home internet and mobile services, of which 2/3rd added one of those services at a later time. This segment is ripe for the picking as many have a low bar – simply pointing to convenience factors like having one bill or a single provider as elements that they like the most in a bundle.
- MSO subscribers and 'converged bundlers' are far more likely to have added mobile service to their home internet service at a later time
- AT&T & Verizon customers and 'converged bundlers' are a little more likely to have added home internet to their mobile service.

**Interested non-bundlers comprise a bigger addressable market, but the bar will be higher**

- Among non-bundlers who are interested in a bundle (29%), most would prefer a bundle from their home internet provider. Looking at the most desired incentives to create a bundle, discounts rank the highest but high internet speeds and free streaming services rank highly when considering their top 3. it's the subsidized handsets, non-handsets, gift cards that rank the lowest as incentives. Of course, with specific details of such offers being available, these attitudes may change.

**Streaming in the bundle**

- Converged bundlers are more likely to stream than non-bundlers and rank streaming highly as an incentive to switch their converged bundle to another provider. Among bundlers and non-bundlers, the majority bundle in at least one service, though they pay separately more often for the larger, mainstream streaming services.

# Call Notes: April 21, 2022
# Subject: CTAM Convergence Team Call

## Welcome/Roll Call

Call Attendees:

Comcast – Morgan Daloisio
GCI – Stephanie Lovett
Mediacom – Dianne Schanne
CTAM – Mark Snow, Deepa Venkataraman, Renee Harris, Nakesa Kouhestani + Jes Johnson Goodway – Chris Dittmore
Locomotive – Megan Dyson, JR Oakes

## GCI Mobile Overview

GCI noted they are having a lot of success with their new bundle which was launched in 2021 – the bundle includes broadband and mobile set at one price. There are four plans offered for the broadband and mobile bundle and video add-ons are offered at a discount. Video add-ons start with an offer of their basic streaming service for $4.95, all the way to their Total TV tier for an additional $99. These are forever bundle prices. [All plans and prices are in the public domain / in advertising.]

GCI's Broadband/Mobile Bundle pricing:

$199 – 2G Unlimited Internet + 1 line of Top Tier Mobile* ($25 for each additional line) $99 – 200Mbps Internet + 1 line of Mid-tier Mobile ($25 for each additional line)

*40% of GCI customers are on their Top Tier plan

GCI is also part of ACP and can offer the bundle to ACP customers.

GCI notes they struggled with mobile awareness initially; and during the initial stages they had to overcome some reputation issues related to bad customers experiences that occurred before GCI bought the network. GCI has now improved network coverage and are seeing improved reputation scores.

What advice does GCI have for other MSOs who are new to the mobile space?

- GCI notes MSOs should leverage the network reputation of MVNO provider (Verizon Wireless) to highlight strength and reliability of the network.
- GCI also notes that the benefit of a Single Bill is a good focus. While everyone goes back and forth about having too much wallet share per month, GCI stated the single bill with one simple price point (not a lot of fees that stack) has resonated with their customers.
- GCI also includes value adds such as customers getting Alaska Airline miles for every dollar spent with double miles on their anniversary date.

## Reviewing + Refining Concepts for Mobile Awareness Building

CTAM met with agency partners, Goodway and Locomotive, to discuss Mobile Awareness Building. The attached document are the collective questions created for MSOs.

Highlights of the discussions include:

**What is the root cause of the awareness issue?**

Comcast

Comcast notes there are a lot of messages to support across their product and service portfolio, and those messages are interconnected – they cannot heavy up on dedicated mobile spend at the expense of broadband, etc.

**Are there any age group target audiences?**

Comcast

Current customers are an easier audience, but they can use support in reaching non-customers. Prospects should be a target audience. From a competitive standpoint, Comcast is more successful with winning from Verizon. T-Mobile is their hardest competitor to win share from due to their low price and customer brand loyalty.

As far as age and income, the demographics are skewed a little because most come from Comcast's base.

Comcast reiterated that in the first phase of messaging, the goal is to land a simple message that states the cable companies now offer mobile service too – same great network quality but for less. Phase two would be bundling value / convergence.

Comcast also notes that consumers are looking for "social proofs" like positive reviews of cable company mobile products, touting awards for best carrier, etc.

CTAM

CTAM will create an overview of ideas, including cost spend detail, which will be taken from existing budgets, to present to MSOs before moving forward with Mobile awareness building tactics.

## Next Steps

CTAM will be in touch with the group regarding next steps.

Presentation: *Convergence Working Group: Awareness Building, April 21, 2022*


## What is the root cause of the awareness issue?

*Making sure we are asking and answering the right questions*

- Level of spending on awareness building? (vs. call-to-action)
- Noise? (broadband, video, other services)
- Share of voice? (in a crowded mature space vs. peer media spenders)
- Message resonance? (what are the proof points said; is it working?)
- What are the target audiences? (Age, income, subs vs. non-subs)

## Questions: value prop, challenge, gaps?

- Is mobile positioned as a price play only?
- Utility of having both services from one provider?
- What *is* the value of having both services with one provider beyond price discount?
- How do we talk about convergence without talking about ~~Bruno~~ convergence?
- People are looking for social proofs – how do we build the bona fides?
- Impression building and mind share > clicks and leads and sales at first
- What research do we have – what is the shop/decide/buy cycle look like?
- What are the consistent barriers to consideration?

## Organic Reach

- Where are the gaps with tactics already in place?
- What are the pain points? What's not working?
- Is the current SEO leveraging local pages?
- Do we have a negativity barrier to overcome? Believability?
- Has a sentiment analysis been done? What are consumers saying on review sites, Reddit, Twitter? "Cable" itself still brings a lot of negative reviews and sentiment – baggage factor"

## Organic/Earned/Owned Ideas

- Leverage localism (city pages on SmartMove exist – add the mobile factor)
- How-to pages to drive traffic (how do I unlock my AT&T, Verizon, T-Mobile phone?)
- Develop content on SmartMove and third-party sites on the benefits of bundling Mobile + Broadband
- Do we need a sentiment analysis done?

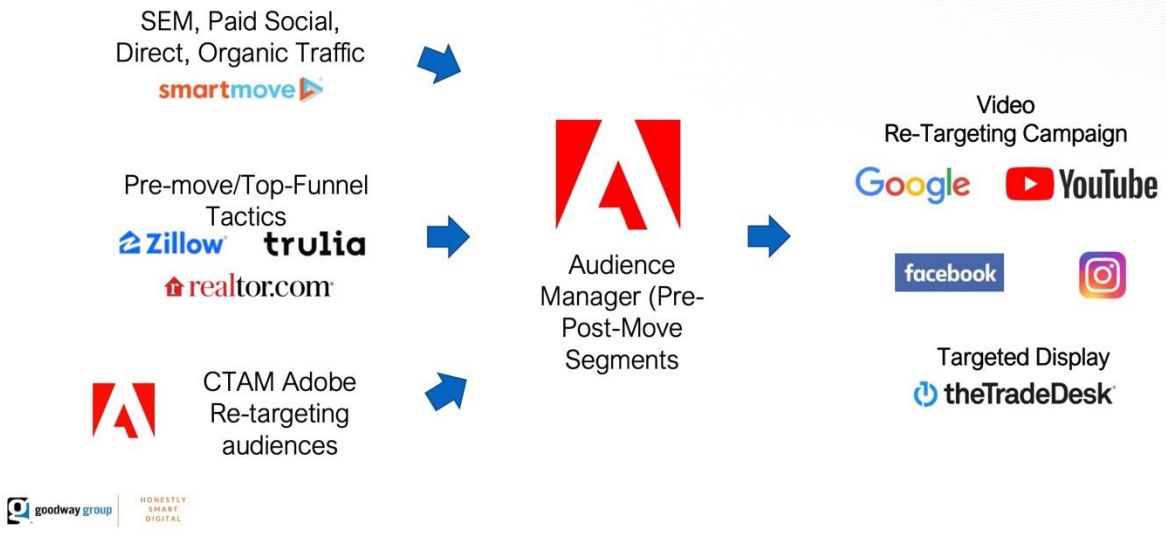
## Paid Media – Small and Medium Ideas

- Leverage CTAM's existing first party (CCPA safe) data to target movers before the move (awareness) and in the critical 60 days after (impression building and call-to-action)
- Deep link the re-targeting audience content to take traffic to a page that goes deep on convergence proof points
- Paid Social, Display; video and still image ads; FB, YouTube, Programmatic
- Overlay support from mobile-enabled MSOs (Comcast, Charter, Altice, GCI and soon Cox) vs. diverting support from the core mover program
- Divert support from Industry Positioning – currently engaged in ACP

## Paid Media – Big Ideas

- Is everyone engaged in Paid Search? Difficult to do regionally vs. established national competitors with large buys and domain authority.
- Do we band together on non-brand SEM?
- National scale, zero overlap, non-brand "trusted advisor" position with SmartMove brand
- Leverage the 2-3 Billion impressions from the legacy mover program

## Using CTAM 1st Party Data to Re-Target Movers




Call Recording: November 30, 2022

CTAM Mobile Awareness Update Call-20221130_103507-Meeting Recording.mp4

## 2 Competition and Retention

# Call Notes: April 14, 2022
# Subject: CTAM Competition + Retention Working Group Kickoff

### Welcome/Roll Call

Call Attendees:

Armstrong – Peter Grewar
Cable One – David Ballew
Cable One – Nanci Campbell
Charter – Kathleen Griffin
Comcast – Ginny Too
Cox – Bruce Berkinshaw
Cox – Anthony DeFilippo
Cox – Tony Maldonado
Cox – Wendy Rosen
CTAM – Mark Snow + Renee Harris

### Statement of Purpose + Scope Discussion

The combined Competition and Retention will operate together in 2022 based on their emerging alignment around threat from and reaction to competitive pressures.

Focusing on both the fiber and fixed wireless broadband threats, this group will work to establish best practices for defending and positioning vs. these two very different competitors.

**Objective:** Focus on the fiber, fixed wireless broadband, and mobile substitution threats to include:

- Defining the threats and the angles of attack they take in their marketing
- Establishing best practices for positioning vs. these very different threats in the marketplace
- Documenting best practices for retaining the broadband customer base (targeted retention)

CTAM notes there is a CTAM Convergence group that may be able to share learnings regarding consumer education around mobile/broadband products as well as bringing awareness to mobile products. As the year progresses, CTAM will share the Convergence group's findings.

### Scan of Top Line from New Street Research's thesis

CTAM reviewed the attached New Street Research's thesis on Broadband trends.

Highlights include:

- **Market Growth is still stronger than normal** – 4Q21 broadband adds were almost 120k higher than Q419.
- **Fiber is taking share from Cable** – Higher fiber adds account for close to 40% of the decline in Cable adds.
- **FWB is taking share as well** – 60k of the 300k decline in Cable adds were due to FWB.

- **Trends in 2022 are hard to predict** – It's difficult to know whether industry adds will remain elevated, evert to normal or pass through a period of slower growth in 2022. In addition, it's difficult to know how quickly FWB adds will ramp. These two uncertainties make it tough to estimate Cable adds.

CTAM will also obtain a copy of the deck that was presented on the April 8 New Street Webinar.

Questions from the group

1. Regarding the notation that the competitive fiber footprint would be greater than originally thought, what is the from and to in penetration coverage?

   *New Street stated instead of 45% to 65% penetration of the country it's looking more like 45% to 75% or 80%.*

2. Does the New Street analysis address the impacts of pandemic winding down?

   *New Street did not go into it specifically but noted the aftermath of the pandemic is affecting growth and noted their fear is a pull through effect. CTAM notes that in the upcoming Q2 Mover Study, questions can be added to address the question of whether consumers are being asked to go back to work in person and, if so, is that affecting broadband or moving behavior. The Q2 Study readout will not be available until July, but CTAM could possibly ask for a sample in advance to see how the data is trending.*

## Next Steps/Call Cadence

The group decided on narrowing the focus to competitive threat to the 20% of players representing 80% of the threat and producing a roster of topics for monthly calls.

CTAM will poll the group to find the best day/time for monthly calls through year end.

Presentation: *NSR Broadband Trends Review*

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## 4Q21 Broadband Trends Review: Where Does Broadband Growth Go In 2022?

***9 April 2022***

**What's new:** In this edition of Broadband Trends, we review the drivers of net add results in 4Q21 and update our view on 2022. We show that market growth was still strong in 4Q21 with the drop in Cable adds likely stemming from FWB and from faster growth in fiber subs. We show that Cable adds are hard to predict in 2022 because industry growth is hard to predict and the pace of FWB adds is hard to predict. Investors are likely to wait until these uncertainties recede before buying Cable stocks again.

**Analysis:** We compare the drivers of adds in 4Q21 to 4Q19 to ascertain what has changed. Industry adds were ~120k higher. Cable adds are down ~300k with ~120k attributable to fiber and ~180k attributable to FWB. FWB adds were ~300k, with ~120k from faster market growth and ~180K from Cable. We anticipate slightly faster than normal market growth in 2022, with fiber and FWB accelerating and cable slowing further. We have made modest changes to our long-term forecast.

**Thesis:** On a longer-term basis we are bullish on broadband infrastructure assets generally. We expect most of the market to remain a duopoly with two well-matched operators, with subs, ARPU, and margins expanding for both. On this view, Cable stocks are undervalued. Though many investors share this view, it is difficult to buy the stocks given the uncertainties mentioned above. Our favorite broadband infrastructure asset is Frontier because their results depend on execution far more than factors that are outside of their control. Moreover, management is excellent, expectations are low, and the stock is far cheaper than Cable (it's even cheaper than Altice).


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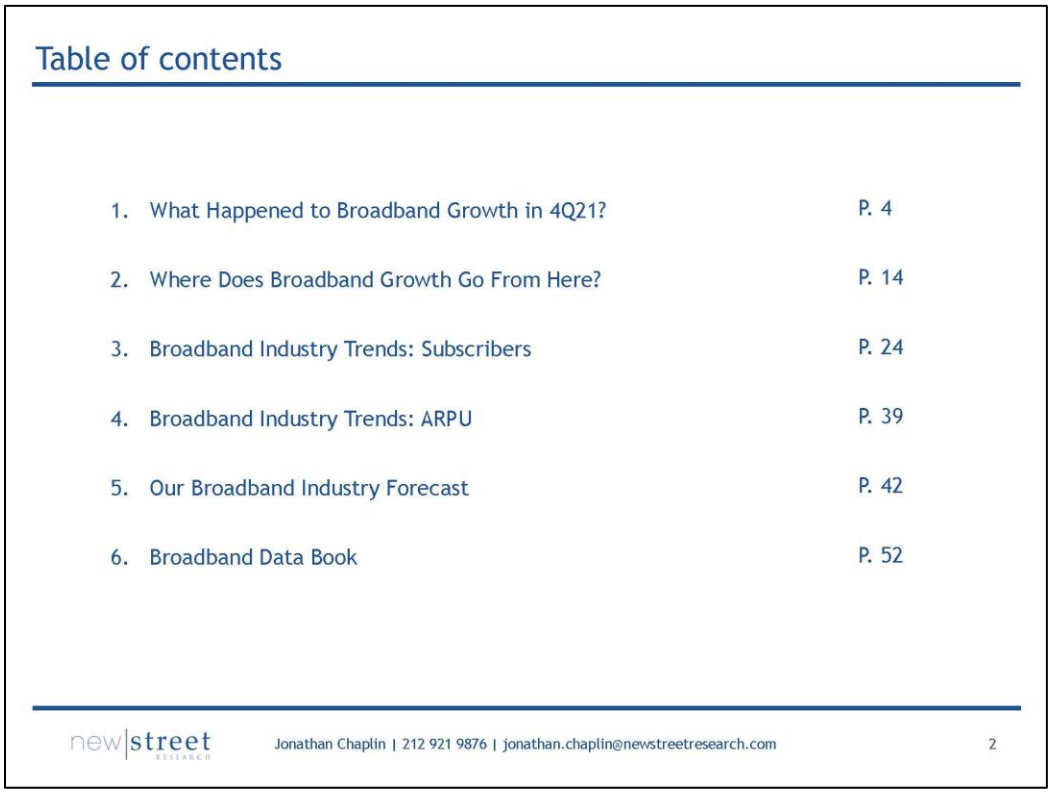

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## Conclusions

| | | |
|---|---|---|
| 1 | **Market growth still stronger than normal** | Industry broadband adds are still above levels that were common before the pandemic. In 4Q21 broadband adds were almost ~120k higher than 4Q19. Cable adds were down by ~300k (after adjusting for an anomaly in 4Q19). Strong industry adds means that slower growth at Cable has nothing to do with market growth. Either Cable is taking less share or losing share. |
| 2 | **Fiber is taking share from Cable** | Fiber net adds increased by about ~100k from 4Q19, helped by an expansion of the market that is addressable with fiber coupled with a stronger marketing push from most operators. DSL losses were about the same as before (after adjusting for an anomaly in 4Q19). Higher fiber adds account for close to 40% of the decline in Cable adds. |
| 3 | **FWB is taking share too** | FWB net adds accelerated to ~300k from 0 in 4Q19. Adds accelerated sequentially too from ~190k in 3Q21. If we attribute the 120k of faster market growth to FWB expanding the market, then ~180k came out of the adds that previously went to fixed providers. This suggests ~180k or more than 60% of the 300k decline in Cable adds was due to FWB. |
| 4 | **Trends in 2022 hard to predict...** | The industry added 2.5MM subs pre-pandemic, but averaged ~4.2MM annually during 2020 and 2021. It's difficult to know whether industry adds will remain elevated, revert to normal, or pass through a period of slower growth in 2022. In addition, it's difficult to know how quickly FWB adds will ramp. These two uncertainties makes it tough to estimate Cable adds. |
| 5 | **...which makes it tough to buy Cable stocks** | We think Cable stocks are cheap, and many of our clients agree. Nevertheless, it is difficult to buy Cable stocks without knowing where adds will bottom. Investors are inclined to wait until estimates have bottomed, but they also fear the Altice scenario where subs and revenue turn negative and operating and financial leverage compound pressures. While unlikely, many investors want this scenario taken off the table before stepping in. |

Source: Company data, New Street Research estimates

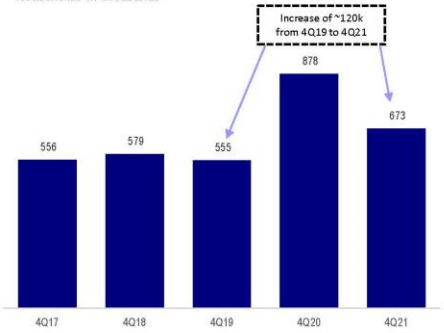


## What happened to broadband growth in 4Q21...

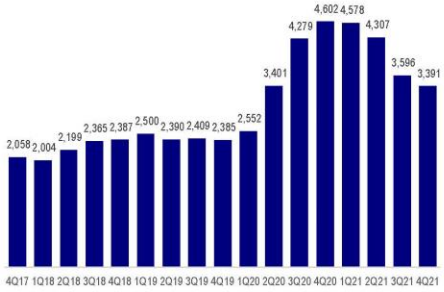
## Broadband market growth was strong again in 4Q21

The broadband market added close to 675k subscribers in 4Q21. That is well above the 550-580k reported in the years preceding the pandemic (we ignore 2020 as a benchmark given unusual pandemic impacts). The slowdown in Cable can't be attributed to a market slowdown.

**Broadband Industry Net Adds - 4Q17 to 4Q21**
*Households in thousands*




**Broadband Industry Net Adds**
*Households in thousands; trailing twelve months*



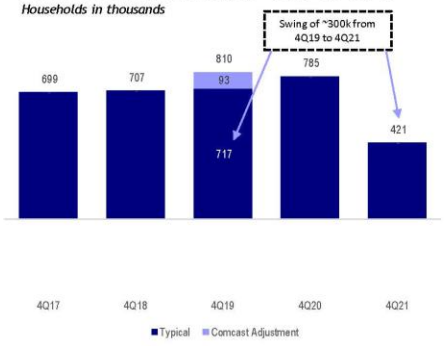

Note – All figures reflect the 10 big Cable and Telecom companies that account for over ~80% of the industry subscriber base and close to ~90% of net adds.
Source: Company data, New Street Research estimates



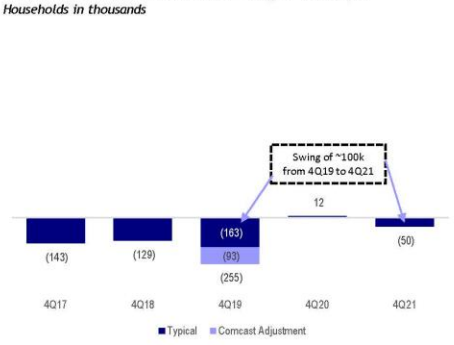
## ILECs doing better, Cable a little worse

The ILECs have gone from losing over 250k subs in 4Q19 to losing only 50k subs in 4Q21 (~200K swing). Cable has gone from adding 810k broadband subs to adding 420k (~400k swing). Comcast had an unusually strong 4Q19. If we assume more typical adds for Comcast, Cable would have added ~700k subs, in line with prior years. This suggests a swing of ~300k rather than ~400k, with the improvement at ILECs accounting for ~100k of the change.

**Cable Broadband Net Adds - 4Q17 to 4Q21**
*Households in thousands*




**ILECs Broadband Net Adds - 4Q17 to 4Q21**
*Households in thousands*

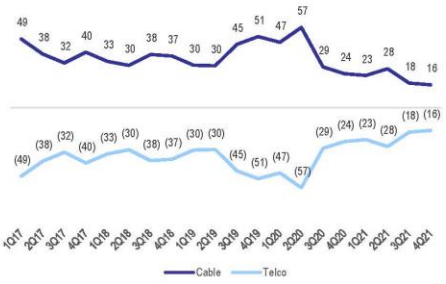



Note – All figures reflect the 10 big Cable and Telecom companies that account for over ~80% of the industry subscriber base and close to ~90% of net adds.
Source: Company data, New Street Research estimates

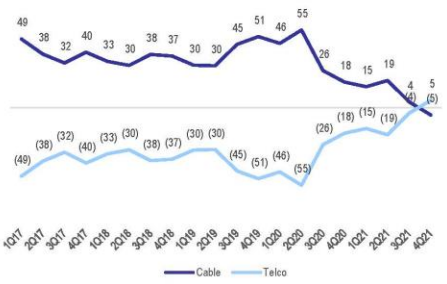
## Cable still taking share among fixed providers

Over the last twelve months, Cable continued to take share in the fixed broadband market, though at a slower pace than before. If we layer in FWB, Cable lost share of the overall broadband market in 4Q21. The last two quarters may be the first time Cable hasn't taken share in well over a decade.

**Change in market share - Cable vs ILECs (ex-FWB)**
*bps*




**Change in market share - Cable vs ILECs (incl-FWB)**
*bps*



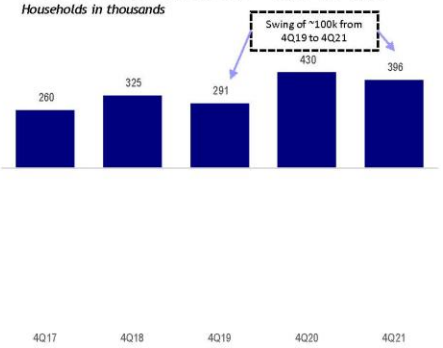

Note – All figures reflect the 10 big Cable and Telecom companies that account for over ~80% of the industry subscriber base and close to ~90% of net adds.
Source: Company data, New Street Research estimates



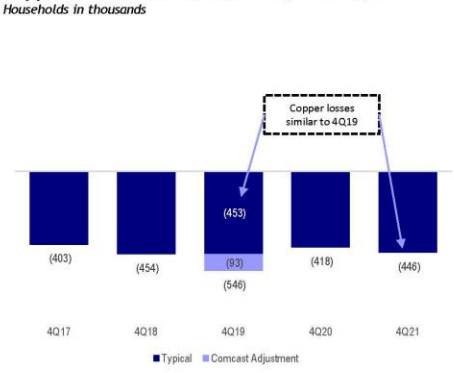
## Improvement in ILEC adds is mostly from Fiber

ILEC fiber net adds have improved by close to 100k (that is more than 2x the step-up we saw in 3Q21). Copper losses are down by 100k. If we assume copper losses were unusually bad in 4Q19 because Comcast was unusually strong, then copper losses are roughly stable, and the improvement at the ILECs really is from fiber.

**Fiber Broadband Net Adds - 4Q17 to 4Q21**
*Households in thousands*




**Copper Broadband Net Adds - 4Q17 to 4Q21**
*Households in thousands*

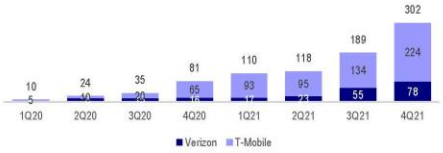



Note – Includes subscribers for AT&T , VZ, LUMN and FYBR, which represent the largest ILECs
Source: Company data, New Street Research estimates

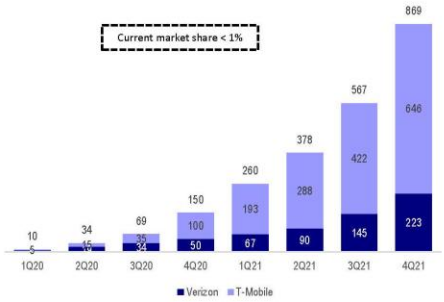
## FWB is also taking a toll

T-Mobile and Verizon added 302k FWB subs in 4Q21 compared to 0 in 4Q19 and prior years (~300k swing). FWB adds also accelerated sharply from 3Q21.

**FWB Net Adds (1Q20 - 4Q21)**
*Households in thousands*




**Total FWB Subscribers (1Q20 - 4Q21)**
*Households in thousands*



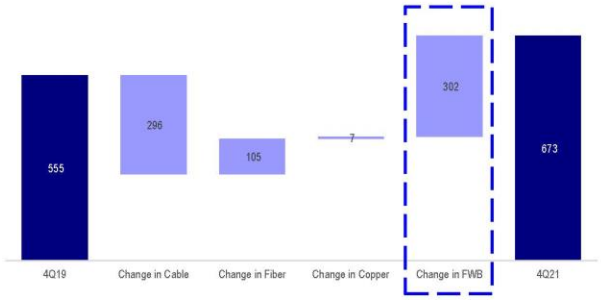

Source: Company data, New Street Research estimates



## FWB expanding the market but also taking share from Cable

In 3Q21, we posited that FWB may have expanded the broadband market (industry adds accelerated by close to 200k; FWB claimed close to 200k subs). This quarter FWB may still be contributing to above-trend industry growth by tapping into wireless-only households; however, it seems to be weighing on Cable too.

**Walkthrough From 4Q19 To 4Q21 Broadband Net Adds**
*Households in thousands*

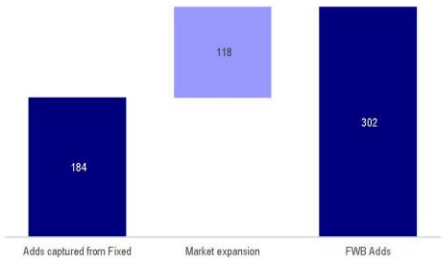



Note – All figures reflect the 10 big Cable and Telecom companies that account for over ~80% of the industry subscriber base and close to ~90% of net adds.
Source: Company data, New Street Research estimates

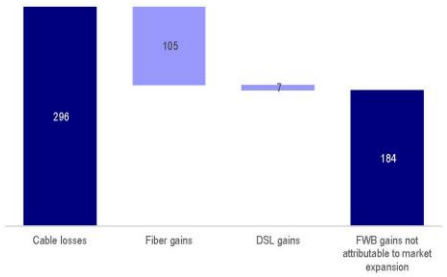
## 60% of FWB adds from Cable; 40% from market expansion

We have too many moving pieces to allocate causality with confidence; however, a plausible explanation that fits the facts is that FWB accelerated the pace of industry adds by ~120k, with ~180k coming from the fixed providers. Cable is down by ~300k, with ~180k going to FWB and ~100k going to fiber. DSL losses are flat.

**Split of FWB Adds in 4Q21**
*Households in thousands*




**FWB Adds Not Attributable to Market Expansion**
*Households in thousands*



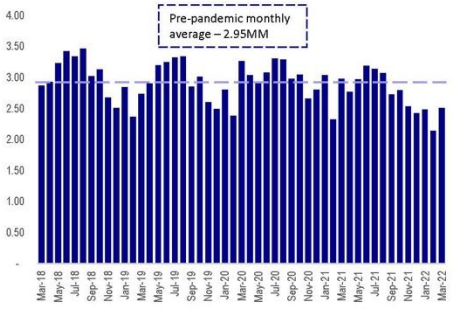

Source: Company data, New Street Research estimates



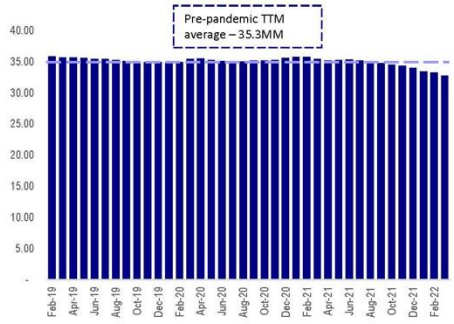
## Moves are down, which hurts all share gainers

Subscriber dynamics may be more complicated than we are showing here. For example, FWB may be taking share from DSL, while DSL may be relinquishing fewer subs to Cable due to depressed moves and switching. USPS data suggests that moves slowed in 2H21. This likely helps Cable in fiber markets but hurts them in DSL markets. With more than half of Cable markets still facing off against DSL, this likely hurts Cable on balance.

**Change of Address Requests - May 2018 to March 2022**
*Households in millions*




**Change of Address Requests - Feb 2019 to March 2022**
*Households in millions; trailing twelve months*

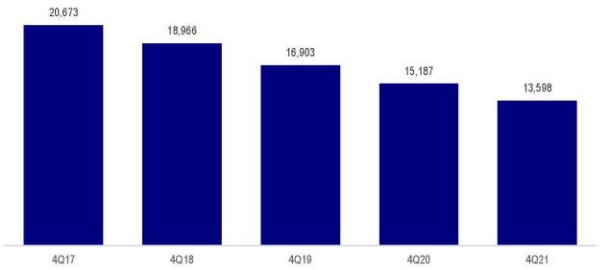



Source: Company data, New Street Research estimates; USPS

## There are still 14MM copper subscribers up for grabs

With 14MM households still on copper among the four largest ILECs, we doubt the base has shrunk to the point where losses will start to flatten. In markets that get fiber, we would assume that most of these subs will be transitioned to fiber. The rest will fall prey to FWB and Cable.

**Copper Broadband Subscribers - 4Q17 to 4Q21[1]**
*Households in thousands*




[1] Includes non-fiber subscribers for AT&T , VZ, LUMN and FYBR, which represent the largest ILECs
Source: Company data, New Street Research estimates

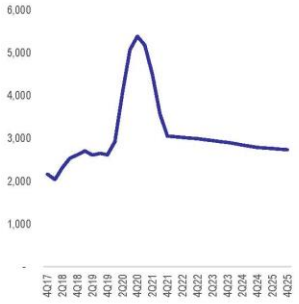


## ...and where does broadband growth go from here

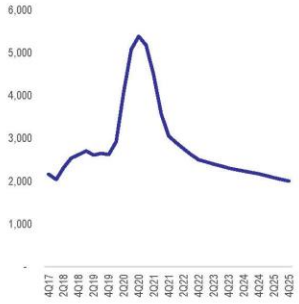
## We don't know what happens to broadband market growth

The industry had been adding subscribers at a steady pace of 2.5MM annually for the years preceding the pandemic. This more than doubled to 5.4MM during the pandemic and remains above normal as of 4Q21. It's difficult to know whether growth remains elevated, reverts to a more normal pace of 2.5MM, or slows to a pace below 2.5MM for a period of time before normalizing. Our base case is for adds of 3.3MM in 2022.

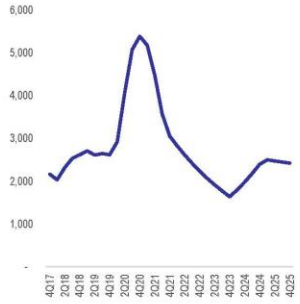
**Scenario 1: Broadband Growth Remains Elevated**
*Subscribers in thousands, TTM*




**Scenario 2: Broadband Growth Returns to Normal**
*Subscribers in thousands, TTM*




**Scenario 3: Broadband Growth Dips Before Returning to Normal**
*Subscribers in thousands, TTM*




Note – Figures above reflect total industry net adds
Source: Company data, New Street Research estimates



## The case for faster growth and the case for slower growth

We assume industry adds of 3.3MM in 2022, like 2021 but above the pre-pandemic pace. We assume FWB cannibalizes wireless-only households and increases the market modestly with second devices for some homes and businesses.

### The case for <u>faster</u> growth

- **Wireless only HH continue to convert to fixed -** Prior to the pandemic, we estimate that ~8MM HH relied on their mobile connection for home broadband. We estimate that this fell to ~6MM by the end of last year and will continue to fall at a pace of 0.7MM in 2022. FWB may be accelerating this shift.
- **FWB serves as a second device for some -** Some businesses and households are buying FWB devices as back-up in case their fixed internet connection fails, or for nomadic use cases.

### The case for <u>slower</u> growth

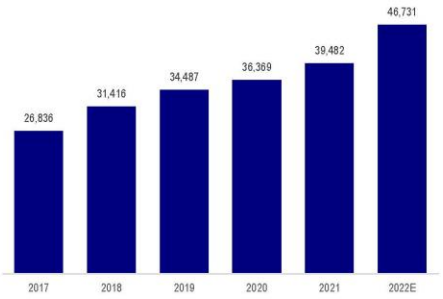
- **A pull forward in demand during the pandemic leading to a slowdown -** The industry added ~3.4MM more subscribers than normal in 2020 and 2021 (1.7MM annually). This reflects a pull forward of demand so that growth dips below normal for a period of time before returning to normal.
- **We are further along the penetration curve -** A more benign case for slower growth would be that the spike in growth during the pandemic has accelerated the market along the penetration curve to a point of slower growth.

Source: Company data, New Street Research estimates

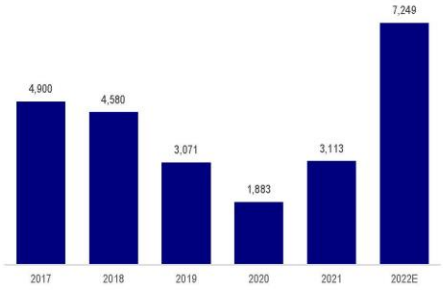
## Fiber deployment will step up in 2022

If all the companies hit their deployment targets, 2022 could be the biggest year for fiber deployments ever. AT&T, Verizon, Frontier, and Lumen are all anticipating a sharp increase in the pace of deployment. We are skeptical that all these companies will meet their deployment targets in 2022, but we are certain the addressable market will grow at a materially faster pace in 2022 than for the preceding three years.

**Cumulative Homes Passed by Fiber - 2017 to 2022E[1]**
*Households in thousands*




**New Homes Passed by Fiber - 2017 to 2022E[1]**
*Households in thousands*



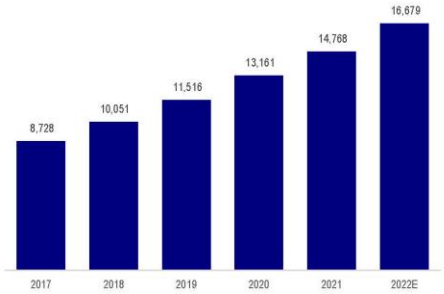

[1] Includes only AT&T, VZ, LUMN and FYBR which have the largest fiber footprint currently and plans to pass the highest number of fiber locations over the next few years.
Source: Company data, New Street Research estimates



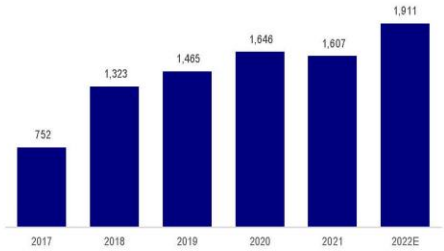
## Fiber net adds will also step up in 2022

We would expect fiber net adds to improve for all the operators as they expand their addressable market. They have all started marketing their offering more aggressively too, with new speed tiers of 2Gbps and even 5Gbps being introduced. Finally, those with a wireless offering have started bundling more aggressively.

**Cumulative Fiber Subscribers - 2017 to 2022E[1]**
*Households in thousands*




**Fiber Net Adds - 2017 to 2022E[1]**
*Households in thousands*

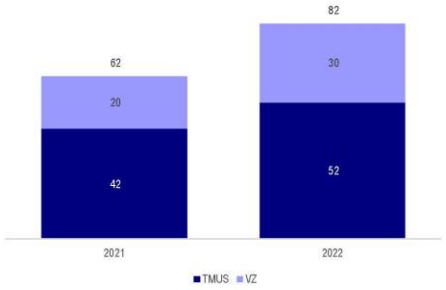



[1] Includes only AT&T, VZ, LUMN and FYBR which have the largest fiber footprint currently and plans to pass the highest number of fiber locations over the next few years.
Source: Company data, New Street Research estimates

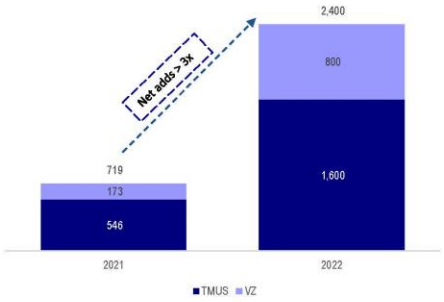
## Fixed wireless broadband availability and net adds will also increase

Verizon and T-Mobile were offering FWB to ~60MM[1] homes at the end of 2021, and they plan to expand this to ~80MM[1] by the end of this year. We expect this, coupled with more aggressive marketing, to drive more than a three-fold increase in net adds in 2022.

**Expansion in Addressable Locations for FWB[1]**
*Locations in millions*




**FWB Net Adds - 2021 and 2022**
*Subscribers in thousands*



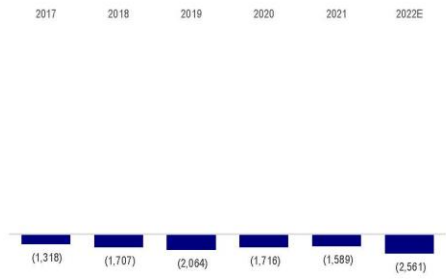

[1] This is assuming there is no overlap between the two. Depending on how much overlap there is, these numbers could be lower.
Source: Company data, New Street Research estimates



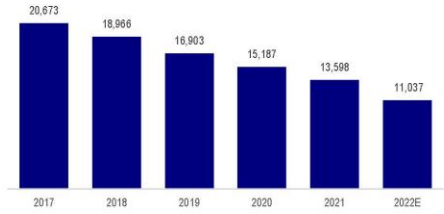
## DSL losses are hard to predict (as if we needed more uncertainty)

DSL losses receded in 2020 and 2021. In 2021, the improvement in DSL losses was a bigger driver of cable pressure than the acceleration in fiber. We suspect two things have slowed the declines: first, a decline in moves (moves are a natural point for switching to occur); second, a decline in competitive switching after a flurry of activity over the pandemic. We assume an above trend pace of losses in 2022 from the impact of FWB.

**DSL Net Losses - 2017 to 2022E[1]**
*Subscribers in thousands*




**DSL Subscriber Base - 2017 to 2022E[1]**
*Subscribers in thousands*



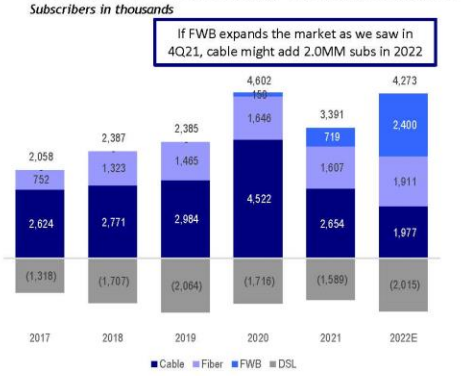

[1] Includes non-fiber subscribers for AT&T , VZ, LUMN and FYBR, which represent the largest ILECs
Source: Company data, New Street Research estimates

## With three sources of uncertainty, Cable adds are hard to predict...

We show two scenarios below: one where FWB adds expand the market, as they appeared to in 3Q21, and one where FWB adds come at the expense of fixed. We assume DSL losses consistent with 2019 and an acceleration in fiber adds as reflected on an earlier slide. In the first scenario, Cable would be left with 2MM adds which is just above the 1.9MM anticipated in consensus. In the second scenario, Cable wouldn't generate any net adds.

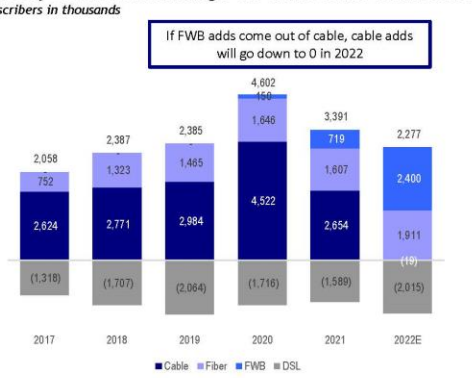
**Industry Net Adds Assuming FWB Expands Market**

*Subscribers in thousands*




**Industry Net Adds Assuming FWB Takes Share from Cable**

*Subscribers in thousands*




Note – All above reflect the 10 big Cable and Telecom companies that account for over ~80% of the industry subscriber base and close to ~90% of net adds.
Source: Company data, New Street Research estimates

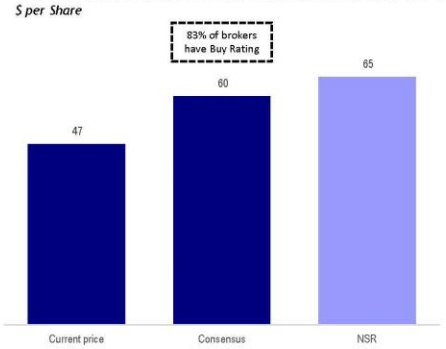


## ...making Cable stocks hard to buy

We continue to believe Cable stocks are undervalued, despite expecting fiber and FWB to take share. Most of the market will be a broadband duopoly with two well-matched operators growing subs, ARPU, and margins at a steady pace. With leverage and repurchases, both will grow FCF at a strong double-digit pace. While many clients share this view, it's difficult for them to buy the stocks until they know where adds will bottom.

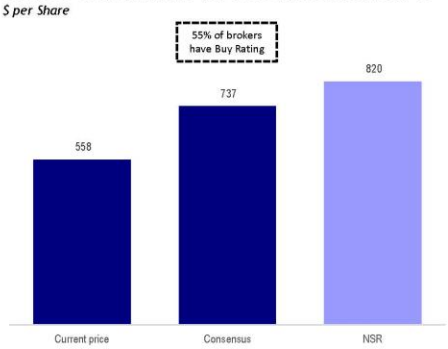
**Comcast Current Price vs. Consensus and NSR PTs**

*$ per Share*




**Charter Current Price vs. Consensus and NSR PTs**

*$ per Share*



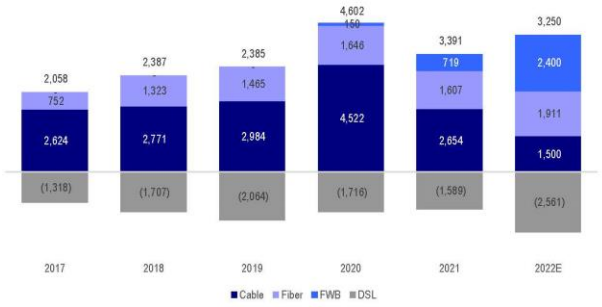

Source: Company data, New Street Research estimates, FactSet

## Our base case for 2022 (held with lower conviction than normal)

On slide 21, we showed the two extreme scenarios of what happens to Cable net adds if FWB expands the market or takes share from Cable. A more likely scenario would be somewhere in between. We expect total broadband net adds of 3.3MM (above pre-pandemic pace), with 1.5MM Cable adds, 1.9MM fiber adds, 2.4MM FWB adds, and 2.5MM DSL losses. FWB takes share from Cable and DSL; it also expands the market, mostly by cannibalizing mobile-only.

**Industry Net Adds - Most Likely Scenario**

*Subscribers in thousands*




Note – All above reflect the 10 big Cable and Telecom companies that account for over ~80% of the industry subscriber base and close to ~90% of net adds.
Source: Company data, New Street Research estimates



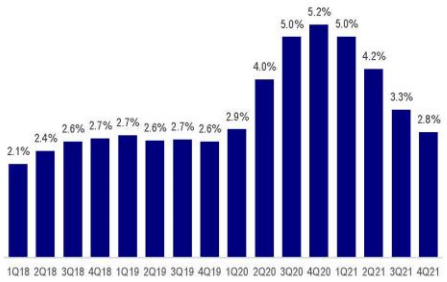
## Broadband Industry Trends: Subscribers

*Industry growth returned to normal this quarter as penetration growth returned to pre-pandemic levels. Cable's market share gains have decelerated and adds were below pre-pandemic levels this quarter, as telco growth accelerated helped by increase in fiber passings.*

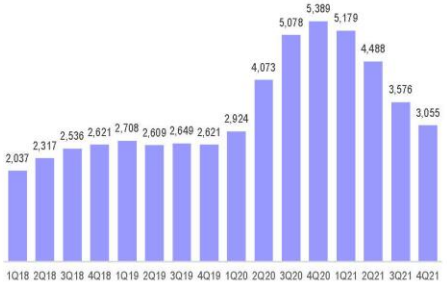
## Residential broadband adds closer to normal…

Residential broadband subscriber growth of 2.8% was only slightly above the pre-pandemic pace of 2.6-2.7%.

**Residential Broadband Subscriber Growth**
*%, y/y*




**Residential Broadband Net Adds**
*Subscribers in thousands, trailing twelve months*




Source: Company data, New Street Research estimates



## …as penetration growth returned to normal

Broadband subscriber growth is driven by two factors: 1) household formation and 2) growth in broadband penetration of households. This quarter, growth from household formation remained steady while penetration growth of 1.6% was in-line with rates prior to the pandemic.

**Residential Broadband Subs Growth By Driver**
*%, y/y*

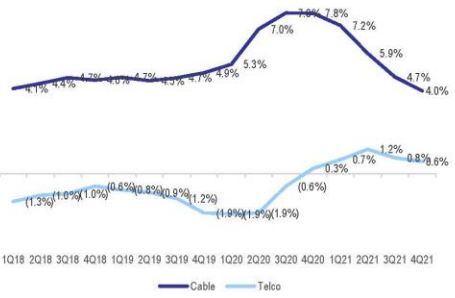

**Residential Broadband Net Adds By Driver**
*Subscribers in thousands, trailing twelve months*


Source: Company data, New Street Research estimates

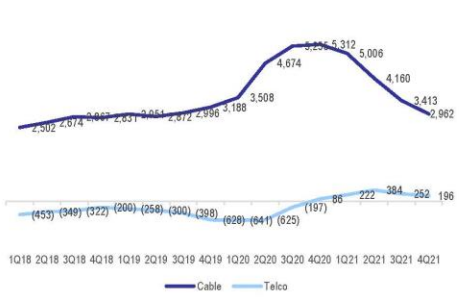
## Cable continues to take share

Cable companies have steadily captured market share from Telcos, as customers opt for Cable's faster speeds in areas where the Telcos don't have fiber. Growth in fiber markets helped Telcos post positive adds for the trailing twelve months for the fifth quarter in a row. Cable's market share increased to 70%, up 70bps from 4Q20.

**Residential Broadband Subscriber Growth**
**Cable vs. Telco**
*%, y/y*




**Residential Broadband Subscriber Net Adds**
**Cable vs. Telco**
*Subscribers in thousands, trailing twelve months*



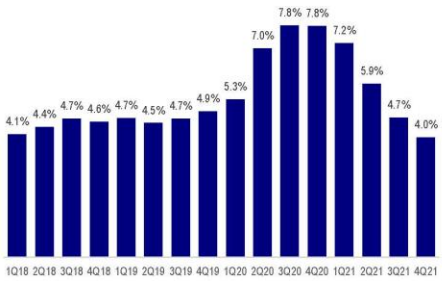

Source: Company data, New Street Research estimates



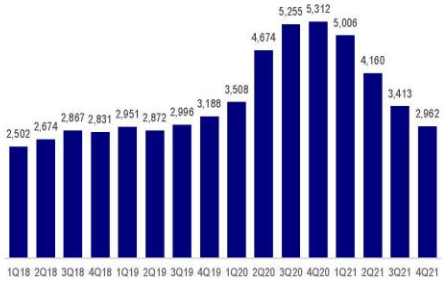
## Cable broadband growth lower than pre-pandemic levels...

Cable broadband growth was 4.0%, down from the peak of 7.8% in 2H20, and slightly below pre-pandemic growth rates of 4.5-5%.

**Cable Residential Broadband Subscriber Growth**
*%, y/y*




**Residential Cable Broadband Net Adds**
*Subscribers in thousands, trailing twelve months*

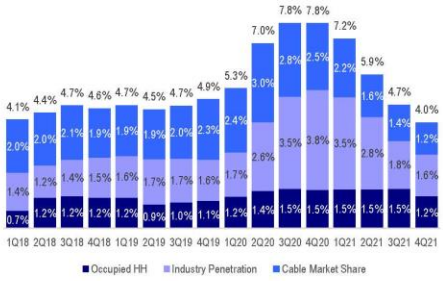



Source: Company data, New Street Research estimates

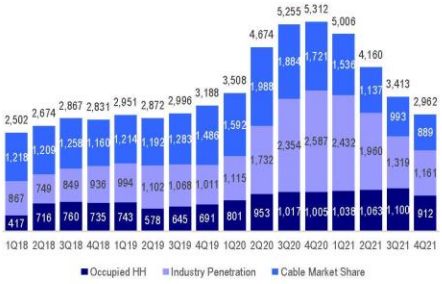
## ...driven by lower market share

Cable broadband subscriber growth is derived from three factors: 1) household formation; 2) broadband penetration gains for the industry; and 3) market share gains. Household formation and penetration gains were at par with pre-pandemic levels; but cable's market share gains decelerated sequentially and is substantially below pre-pandemic levels.

**Residential Cable Broadband Subs Growth By Driver**
*%, y/y*




**Residential Cable Broadband Net Adds By Driver**
*Subscribers in thousands, trailing twelve months*



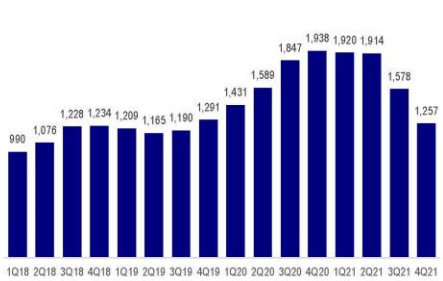

Source: Company data, New Street Research estimates



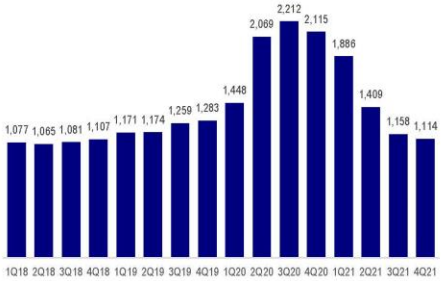
## Comcast and Charter net adds are at long-term averages

Comcast and Charter's broadband adds over the trailing twelve months are back at historical levels.

**CMCSA Residential Broadband Net Adds**
*Subscribers in thousands, trailing twelve months*




**CHTR Residential Broadband Net Adds**
*Subscribers in thousands, trailing twelve months*

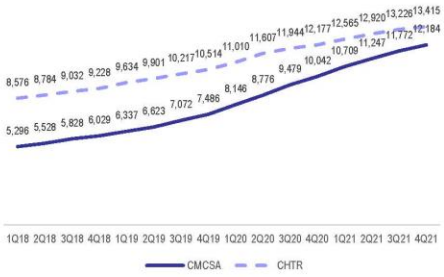



Source: Company data, New Street Research estimates

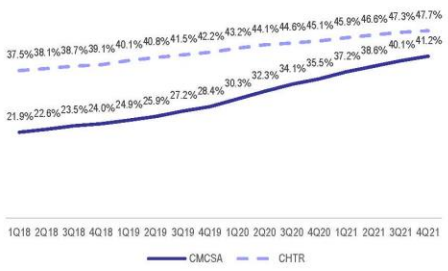
## Single play broadband additions remain strong

Single play broadband subscribers have steadily increased over the past three years. This quarter, Comcast's single play broadband subs grew by 21% y/y, while Charter's grew 10%, slightly below last quarter. Charter has significantly more single play broadband subscribers than Comcast; however, the gap has started to narrow following Comcast's marketing shift towards prioritizing broadband over video in 2019.

**Single Play Broadband Subscribers**
*Subscribers in thousands*




**Single Play Broadband Penetration Of Broadband Subscribers**
*%*



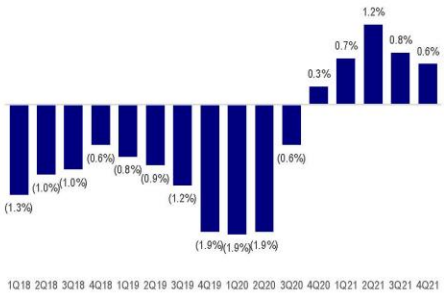

Source: Company data, New Street Research estimates



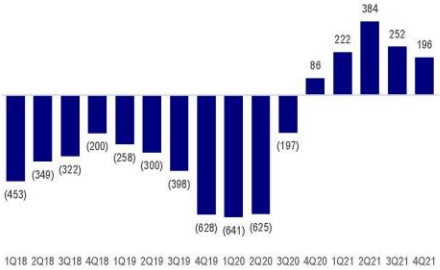
## Telco broadband continues to grow

Telco broadband growth turned positive in 4Q20 for the first time since 2015, as fiber subscriber additions offset losses in non-fiber subscribers. Subscriber growth remained positive in 4Q21, and we expect trends to continue improving as Telcos deploy fiber to new markets.

**Residential Telco Broadband Subscriber Growth**
*%, y/y*




**Residential Telco Broadband Net Adds**
*Subscribers in thousands, trailing twelve months*



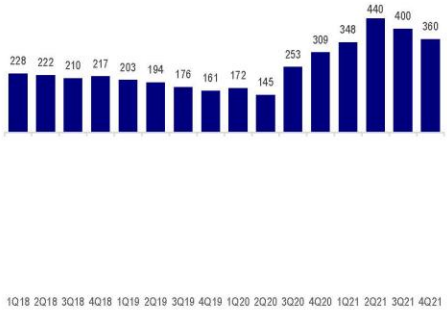

Source: Company data, New Street Research estimates

## Broadband adds at AT&T and Verizon improved

Broadband net adds at AT&T accelerated yoy, helped by an expanding fiber footprint (AT&T has added 2.5MM new homes passed by fiber in the last 12 months). Fiber penetration is 37%. We expect AT&T to double their fiber footprint over the next four years. Net adds at Verizon also accelerated yoy, as Verizon has become more aggressive with its fixed-mobile converged offerings.

**AT&T Residential Broadband Net Adds**
*Subscribers in thousands, trailing twelve months*


**Verizon Residential Broadband Net Adds**
*Subscribers in thousands, trailing twelve months, excludes DSL*



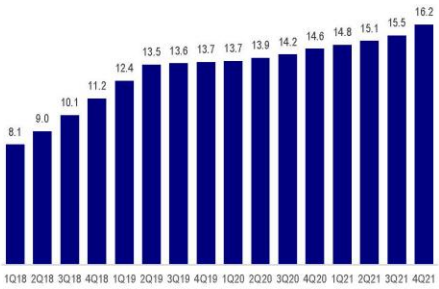

Source: Company data, New Street Research estimates



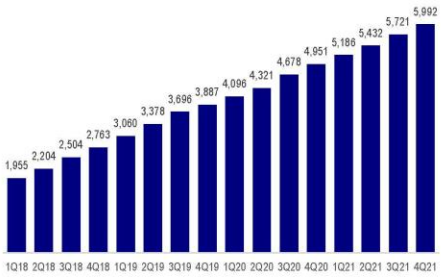
## AT&T's fiber passings and subscribers grow

AT&T has restarted its fiber build and is targeting 30MM fiber passings by 2030. The company initially targeted 3MM new homes passed by fiber in 2021 but revised it down to 2.5MM due to supply constraints. They have guided to 3.5-4MM new fiber locations per year for now. Fiber adds have been consistent and penetration improved nearly 300bps yoy.

**AT&T Fiber Homes Passed**
*Households in millions*




**AT&T Fiber Subscribers**
*Subscribers in thousands*



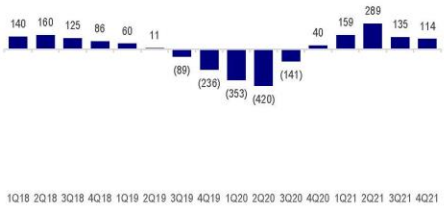

Source: Company data, New Street Research estimates

## AT&T's subscriber losses in non-fiber markets moderate

While subscribers in the fiber footprint are accelerating, subscriber losses in the U-Verse and DSL areas are moderating. The pace of U-Verse declines moderated during the pandemic, which we attribute to a drop in move churn and switching. We expect churn to pick up slightly in 2022 leading to slightly higher declines in U-Verse subscribers. AT&T's DSL base is now almost too small to matter.

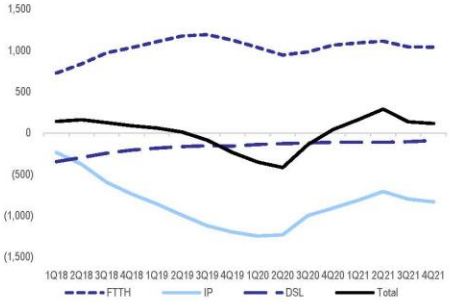
**AT&T Broadband Net Adds**

*Subscribers in thousands, trailing twelve months*




**AT&T Broadband Net Adds By Plant Type**

*Subscribers in thousands, trailing twelve months*




Source: Company data, New Street Research estimates

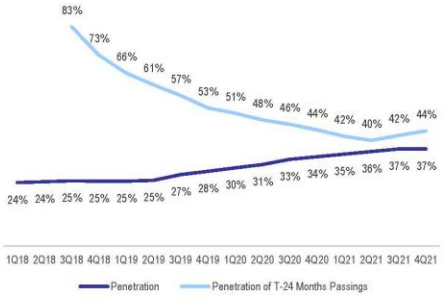


## AT&T fiber penetration accelerated as passings growth slowed

AT&T completed its initial fiber build to 14MM homes in 2Q19, and as deployments stalled penetration accelerated. Penetration of homes passed two years previously is 44% and rising. We expect penetration to dip in the near-term as AT&T continues to expand its fiber footprint, before starting to inch up again.

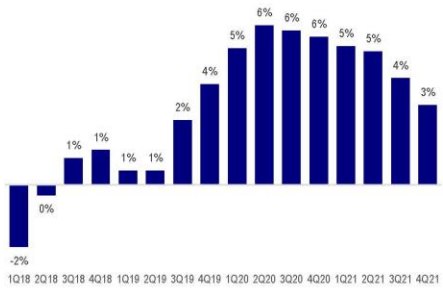
**AT&T Fiber Penetration**

%




**AT&T Fiber Penetration Change Y/Y**

%

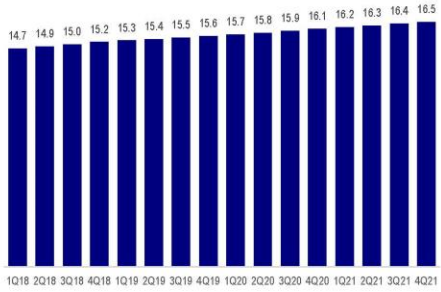



Source: Company data, New Street Research estimates

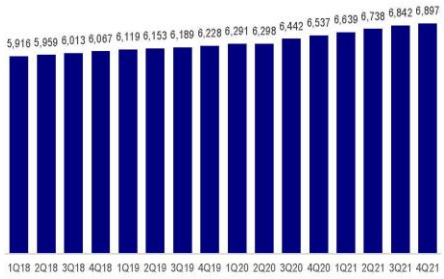
## Verizon is steadily growing fiber subscribers…

We assume Verizon has increased homes passed by fiber at a steady pace, in line with household growth. Verizon is now targeting 550k new fiber passings in 2022 and we expect Verizon to continue passing 400-500k new fiber homes every year thereafter. Penetration had been relatively stable at around 40% for most of the last three years; however, it has accelerated over the last six quarters reaching an estimated 42% in 4Q21.

**Verizon Fiber Homes Passed**
*Households in millions*




**Verizon Fiber Subscribers**
*Subscribers in thousands*



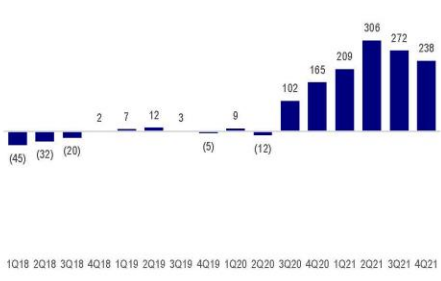

Source: Company data, New Street Research estimates



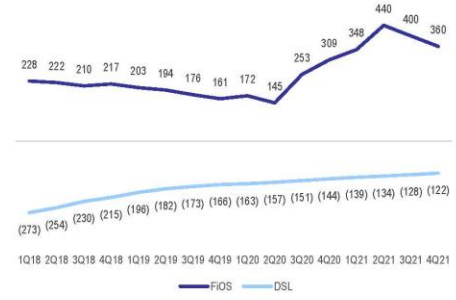
## …and net adds are accelerating

In 2017 and 2018, losses in Verizon's DSL footprint offset steady broadband additions in the FiOS footprint. In 2019 and the first half of 2020, DSL losses slowed while FiOS adds remained stable, resulting in modest gains in total broadband subscribers. In the last six quarters, fiber adds increased sharply while DSL losses continued to steadily improve.

**Verizon Broadband Net Additions**
*Subscribers in thousands, trailing twelve months*




**Verizon Net Additions By Plant Type**
*Subscribers in thousands, trailing twelve months*




Source: Company data, New Street Research estimates

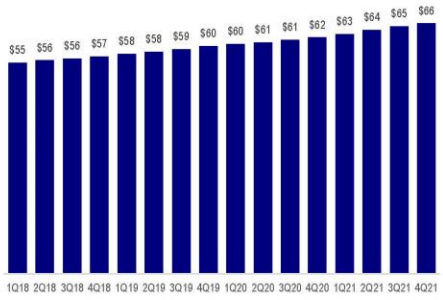
## Broadband Industry Trends: ARPU



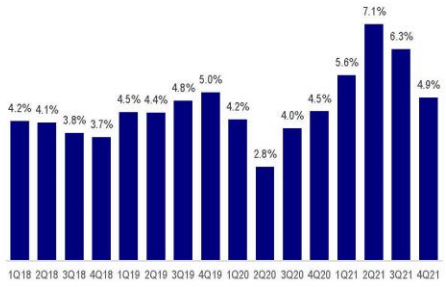
## Cable Broadband ARPU growth back to more normal levels

ARPU growth in 4Q21 was lower than the past two quarters but was still close to 5%, slightly above pre-pandemic levels. ARPU growth in 2Q21 and 3Q21 benefitted from easy comps as the previous year ARPUs were pressured due to write-offs relating to customers inability to pay in the wake of the pandemic.

**Broadband ARPU**
*$ per subscriber, monthly, trailing twelve months*




**Broadband ARPU Growth**
*%*

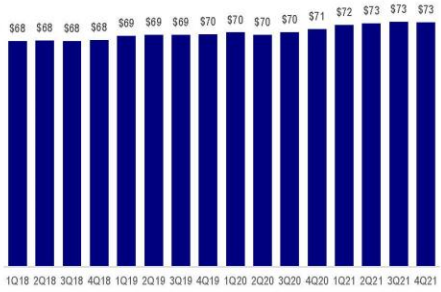



Source: Company data, New Street Research estimates

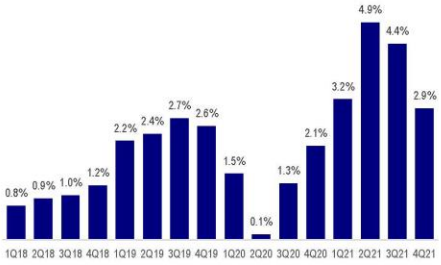
## Cable ARPU trends are distorted by allocation decisions

The way that companies account for products within a bundle distorts the underlying pricing of each product. Here we show broadband and voice revenue divided by broadband subscribers, which we think is a more representative ARPU metric (voice isn't really a discrete product anymore). Similar to standalone broadband ARPU, broadband + voice ARPU growth decelerated to 3% but remained slightly above pre-pandemic levels.

**Cable Broadband + Voice ARPU**
*$ per subscriber, monthly*




**Cable Broadband + Voice ARPU Growth**
*%*




Source: Company data, New Street Research estimates



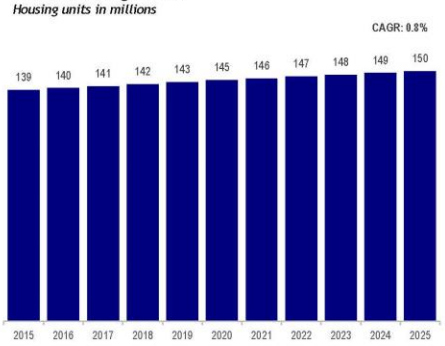
## Our Broadband Industry Forecast

In the following section we lay out our top-down forecast for internet households and, after giving effect to our forecast for wireless substitution, our estimate for the fixed broadband market.

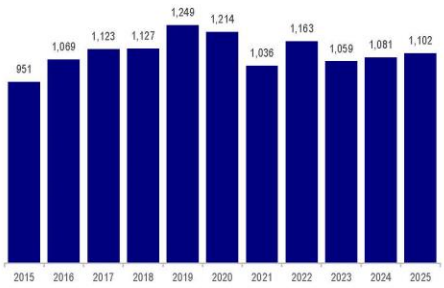
## Total housing units grow at a steady pace

Total residential housing units have grown steadily between 0.5-1.0% for the last five years. We assume similar growth in future years. Housing units don't drive our broadband forecast; we model occupied housing unit, or households, separately based on census forecasts (see next slide); we maintain a housing unit forecast because some data series use this for calculating penetration (we don't; our penetration figures are based on households).

**Total Housing Units**
*Housing units in millions*




**Total Housing Units Net Adds**
*Housing units in thousands*



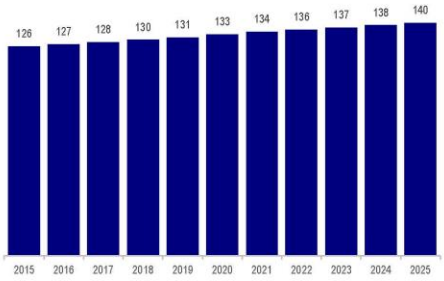

Source: Census Bureau, FCC, New Street Research estimates



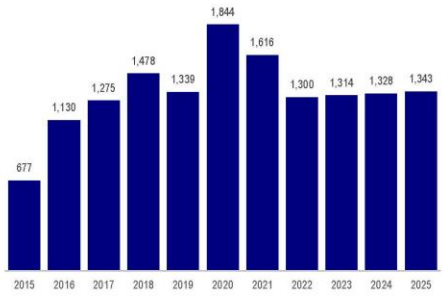
## Addressable households should also grow at a steady pace

We believe the correct driver for addressable households should include occupied housing units and seasonal homes as reported by the census. It also includes group living quarters from the Census' ACS survey (university housing; military barracks; etc.). Addressable household growth has been somewhat volatile over the last five years; we assume growth tapers off from its elevated level today to its 5-year average.

**Addressable Households**
*Households in millions*




**Addressable Households Net Adds**
*Households in thousands*

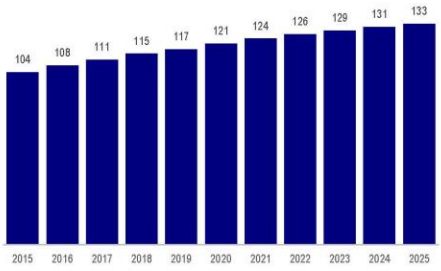



Source: FCC, New Street Research estimates

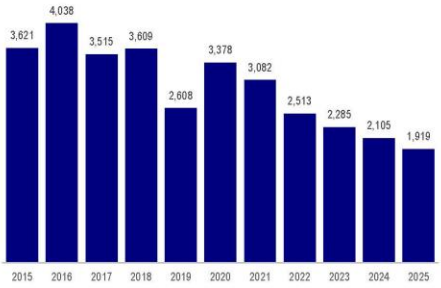
## Internet household growth will slow as saturation approaches

Growth in internet households was particularly strong in 2016. We attribute the growth largely to Wireless-only households from the influx of lifeline households and the ubiquitous rise of unlimited data plans. Growth slowed in 2019 but accelerated again in 2020 as more households required internet to work and school from home. We assume internet household growth will slow steadily as internet penetration approaches saturation.

**Internet Households**
*Households in millions*




**Internet Household Net Adds**
*Households in thousands*



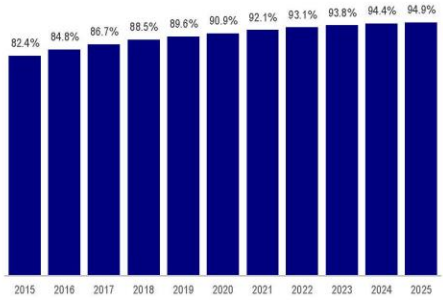

Source: FCC, New Street Research estimates



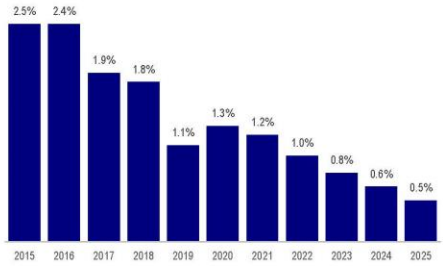
## Internet penetration should reach 95% in 2025

Internet penetration of addressable homes is 92%. We expect this to reach 95% by the end of our forecast period and 97% longer term. The pace of penetration gains will slow in outer years as saturation nears. Penetration is often expressed at a percentage of total housing units rather than addressable households - on this basis it was 83% in 2020 growing to 89% by the end of our forecast period.

**Internet Penetration**
*% of total households*




**Internet Penetration**
*% of total households; y/y change*

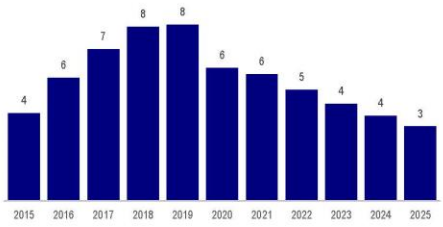



1) We estimate internet penetration will reach 97% over time, based on peak telephone penetration.
Source: Census Bureau, New Street Research estimates

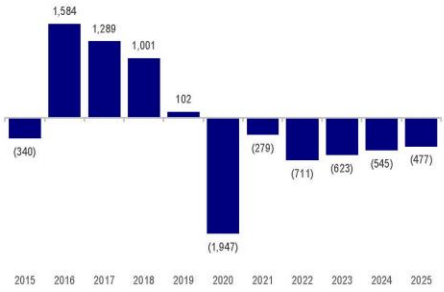
## We assume a decline in wireless only households

Wireless only households grew rapidly from 2016 through 2019, likely due to the proliferation of 4G Smartphones and unlimited plans. We previously expected wireless only households to increase to 9MM by 2025; however, we believe that wireless-only households have declined sharply during the pandemic. We assume wireless-only households continue to decline.

**Wireless Only Households**
*Households in millions*




**Wireless Only Households**
*Households in thousands; y/y change*



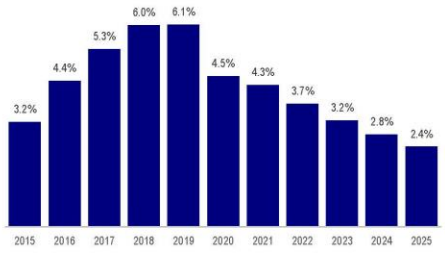

Source: New Street Research estimates



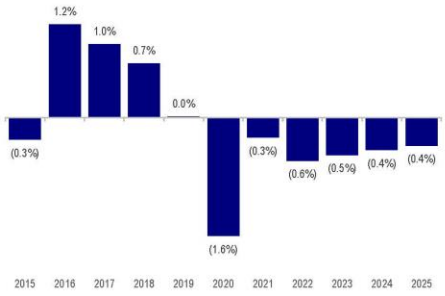
## Wireless only penetration falls to ~2% in 2025

Wireless only penetration was slightly above 6% at the end of 2019. We had previously expected this to rise gradually; however, penetration dropped to an estimated 4.5% during the pandemic, and we expect it to fall to 2.4% by the end of the forecast period.

**Wireless-only Penetration**
*%*




**Wireless-only Penetration**
*%; y/y change*

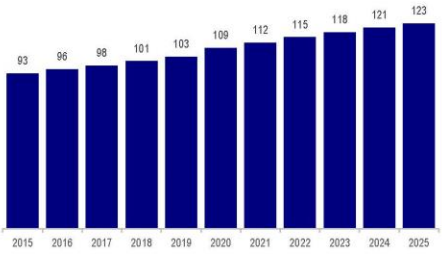



Source: FCC, New Street Research estimates

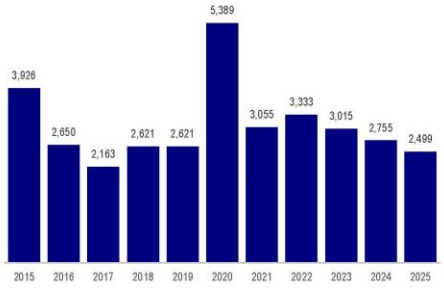
## Residential fixed broadband growth should remain robust

We estimate growth in fixed broadband subscribers of 3.3MM in 2022 falling to 2.5MM by the end of the forecast period.

**Residential Fixed Broadband Subscribers**
*Subscribers in millions*




**Residential Fixed Broadband Subscriber Net Additions[1]**
*Subscribers in thousands, y/y change*



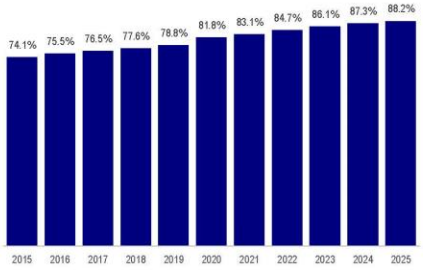

[1]The numbers here are slightly different from those shown in earlier slides because they include all operators, whereas in the front section we are only showing a forecast for the big 10 cable and telecom operators which account for over ~80% of the industry subscriber base and close to ~90% of net adds. Source: FCC, New Street Research estimates



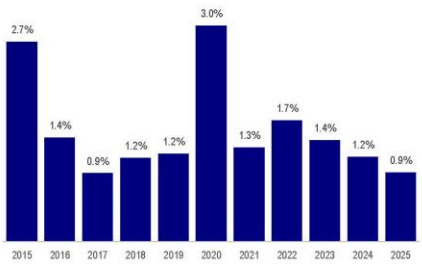
## Fixed broadband penetration should approach 88% by 2025

Fixed broadband penetration was 83% at the end of 2021. We expect penetration growth to slow steadily over the next five years, with penetration of 88% by the end of our forecast period.

**Residential Fixed Broadband Penetration**
*% of total households*




**Residential Fixed Broadband Penetration**
*% of total households, y/y change*

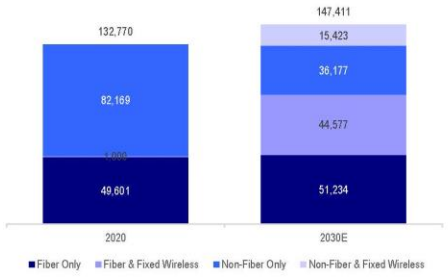



Source: FCC, New Street Research estimates

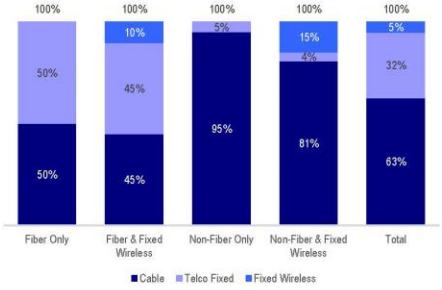
## Competitive dynamics will change with fiber and FWB deployment

We assume FTTH is deployed to 96MM residential homes, up from 55MM today. We assume FWB is deployed to 85MM homes, up from ~60MM today. In markets without FWB, we assume Cable wins 50% share against FTTH and 95% share against Copper. We assume FWB captures 10% share in markets where they compete with Cable and FTTH, and 15% share in markets where they face Cable and Copper.

**Total Homes Overlap By Telco Infrastructure**
*%*




**Residential Broadband Terminal Market Share In Cable Footprint**
*%, 2030E*




Source: FCC, New Street Research estimates



## Broadband Data Book

# Section I: Industry Trends


**i. Industry Trends**

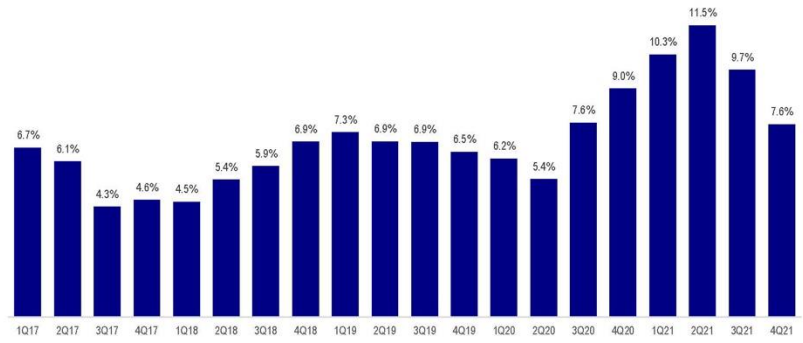
| | |
|---|---|
| Revenue Growth | 54 |
| Revenue Growth: Cable vs. Telco | 55 |
| ARPU Growth | 56 |
| ARPU Growth: Cable vs. Telco | 57 |
| Subscriber Growth | 58 |
| Subscriber Growth: Cable vs. Telco | 59 |
| Subscriber Share | 60 |
| TTM Net Adds | 61 |
| Net Adds: Cable vs. Telco | 62 |
| Penetration of Homes Passed | 63 |

**ii. Company Trends**

| | |
|---|---|
| Revenue Growth - Cable | 65 |
| Revenue Growth - Telco | 66 |
| ARPU Growth - Cable | 67 |
| ARPU Growth - Telco | 68 |
| Subscriber Growth - Cable | 69 |
| Subscriber Growth - Telco | 70 |
| Net Adds - Cable | 71 |
| Net Adds - Telco | 72 |
| Penetration of Homes Passed - Cable | 73 |
| Penetration of Homes Passed - Telco | 74 |

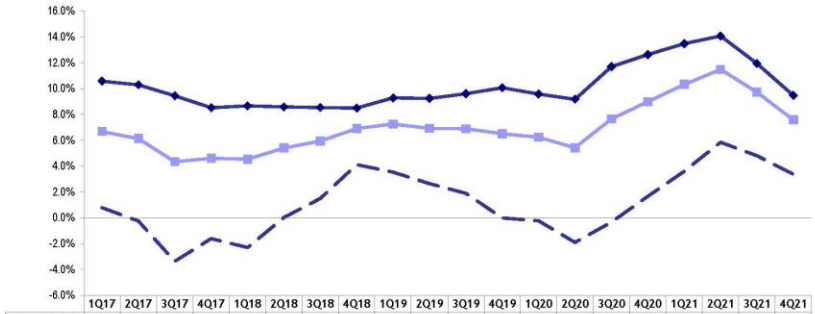



# Residential Broadband Revenue Growth (y/y)




Source: Company Data, NSR estimates.

## Residential Broadband Revenue Growth: Cable vs. Telco (y/y)

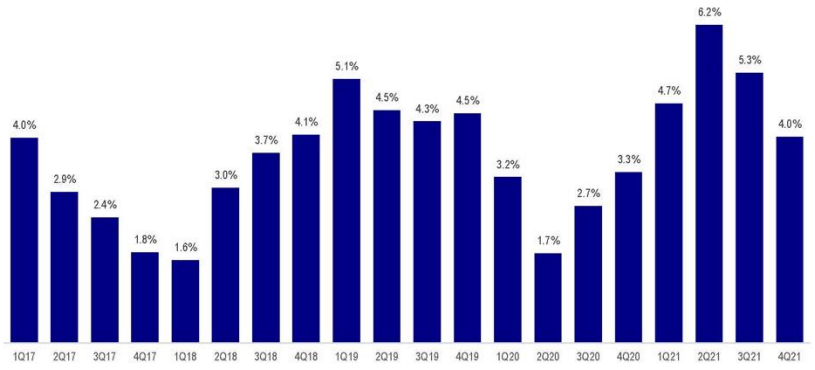



| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable | 10.6% | 10.3% | 9.4% | 8.5% | 8.7% | 8.6% | 8.5% | 8.5% | 9.3% | 9.2% | 9.6% | 10.1% | 9.6% | 9.2% | 11.7% | 12.6% | 13.5% | 14.1% | 11.9% | 9.5% |
| Telco | 0.8% | -0.2% | -3.4% | -1.6% | -2.3% | 0.0% | 1.5% | 4.1% | 3.5% | 2.7% | 1.9% | 0.0% | -0.2% | -1.9% | -0.3% | 1.7% | 3.6% | 5.8% | 4.8% | 3.4% |
| Total | 6.7% | 6.1% | 4.3% | 4.6% | 4.5% | 5.4% | 5.9% | 6.9% | 7.3% | 6.9% | 6.9% | 6.5% | 6.2% | 5.4% | 7.6% | 9.0% | 10.3% | 11.5% | 9.7% | 7.6% |

Source: Company Data, NSR estimates.

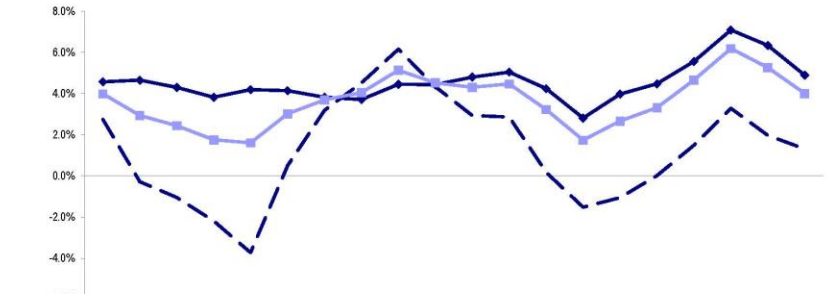


## Residential Broadband ARPU Growth (y/y)




Source: Company Data, NSR estimates.

## Residential Broadband ARPU Growth: Cable vs. Telco (y/y)

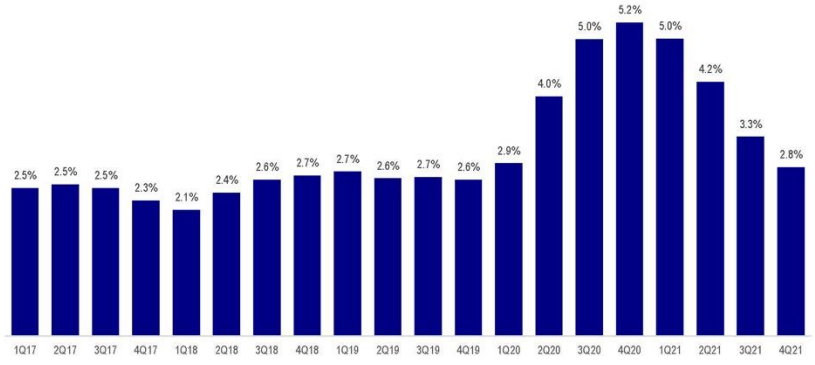



| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable | 4.6% | 4.7% | 4.3% | 3.8% | 4.2% | 4.1% | 3.8% | 3.7% | 4.5% | 4.4% | 4.8% | 5.0% | 4.2% | 2.8% | 4.0% | 4.5% | 5.6% | 7.1% | 6.3% | 4.9% |
| Telco | 2.7% | -0.3% | -1.0% | -2.2% | -3.7% | 0.5% | 3.2% | 4.5% | 6.2% | 4.3% | 2.9% | 2.9% | 0.2% | -1.5% | -1.1% | 0.0% | 1.5% | 3.3% | 2.0% | 1.3% |
| Total | 4.0% | 2.9% | 2.4% | 1.8% | 1.6% | 3.0% | 3.7% | 4.1% | 5.1% | 4.5% | 4.3% | 4.5% | 3.2% | 1.7% | 2.7% | 3.3% | 4.7% | 6.2% | 5.3% | 4.0% |

Source: Company Data, NSR estimates.

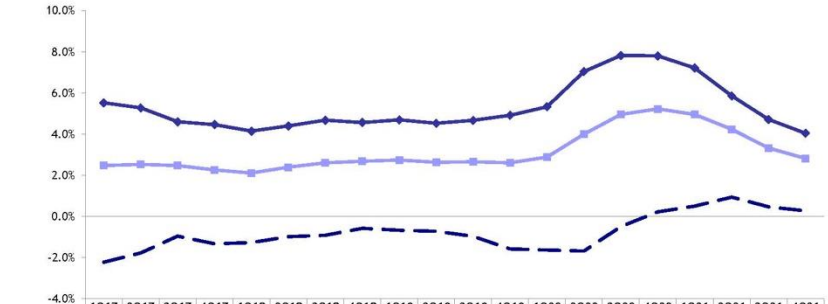


## Residential Broadband Subscriber Growth (y/y)




Source: Company Data, NSR estimates.

## Residential Broadband Subscriber Growth: Cable vs. Telco (y/y)

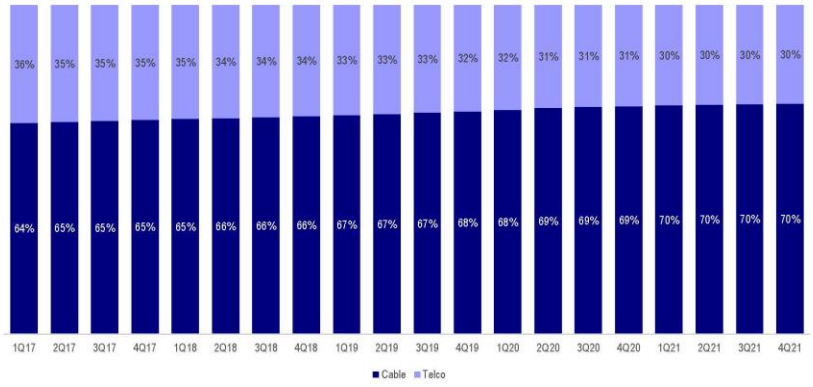



| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable | 5.5% | 5.3% | 4.6% | 4.5% | 4.1% | 4.4% | 4.7% | 4.6% | 4.7% | 4.5% | 4.7% | 4.9% | 5.3% | 7.0% | 7.8% | 7.8% | 7.2% | 5.9% | 4.7% | 4.0% |
| Telco | -2.2% | -1.8% | -1.0% | -1.3% | -1.3% | -1.0% | -0.9% | -0.6% | -0.7% | -0.7% | -1.0% | -1.6% | -1.6% | -1.7% | -0.5% | 0.2% | 0.5% | 0.9% | 0.5% | 0.3% |
| Total | 2.5% | 2.5% | 2.5% | 2.3% | 2.1% | 2.4% | 2.6% | 2.7% | 2.7% | 2.6% | 2.7% | 2.6% | 2.9% | 4.0% | 5.0% | 5.2% | 5.0% | 4.2% | 3.3% | 2.8% |

Source: Company Data, NSR estimates.

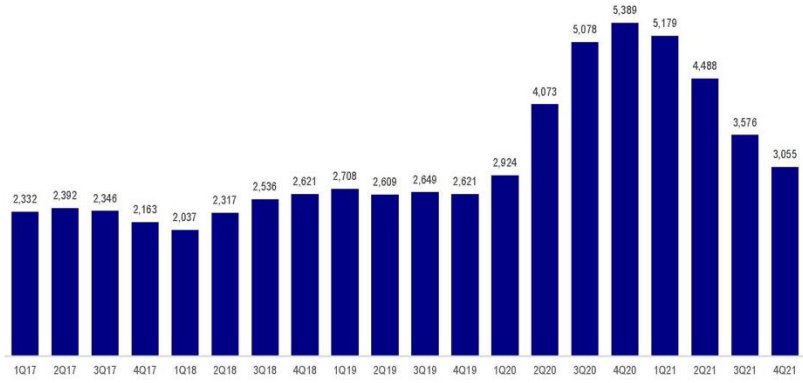


## Total Broadband Subscriber Share




Source: Company Data, NSR estimates.

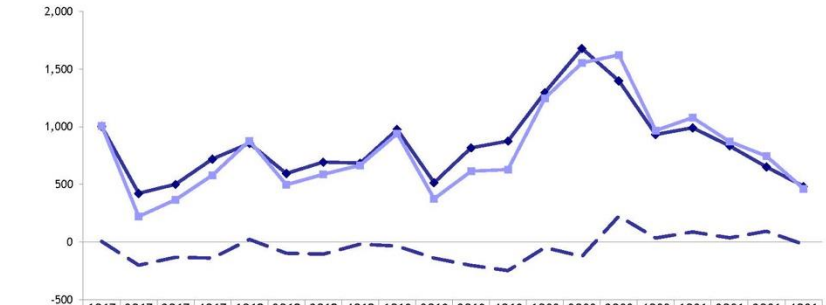
## TTM Residential Broadband Net Adds




Source: Company Data, NSR estimates.



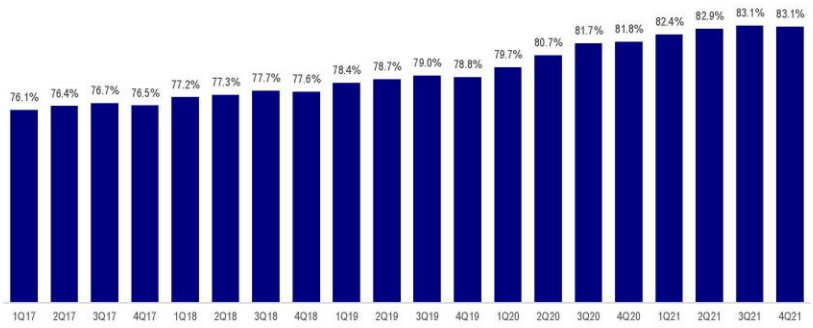
## Residential Broadband Net Adds: Cable vs. Telco




| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cable | 1,005 | 423 | 501 | 721 | 857 | 595 | 694 | 685 | 977 | 515 | 818 | 877 | 1,298 | 1,681 | 1,400 | 934 | 992 | 835 | 653 | 483 |
| Telco | 5 | -202 | -133 | -140 | 22 | -98 | -106 | -18 | -36 | -140 | -204 | -248 | -49 | -125 | 225 | 34 | 88 | 37 | 93 | -21 |
| Total | 1,010 | 221 | 368 | 581 | 879 | 497 | 588 | 667 | 941 | 375 | 615 | 629 | 1,249 | 1,556 | 1,625 | 968 | 1,080 | 871 | 745 | 462 |

Source: Company Data, NSR estimates.

## Residential Broadband Penetration[1]




1) Residential subscribers divided by the difference between total residential homes and vacant homes

Source: US Census, Pew Research, SNL Kagan, Company Data, NSR estimates.



## Section II: Company Trends

**i. Industry Trends**

| | |
|---|---|
| Revenue Growth | 54 |
| Revenue Growth: Cable vs. Telco | 55 |
| ARPU Growth | 56 |
| ARPU Growth: Cable vs. Telco | 57 |
| Subscriber Growth | 58 |
| Subscriber Growth: Cable vs. Telco | 59 |
| Subscriber Share | 60 |
| TTM Net Adds | 61 |
| Net Adds: Cable vs. Telco | 62 |
| Penetration of Homes Passed | 63 |

**ii. Company Trends**

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| Revenue Growth - Cable | 65 |
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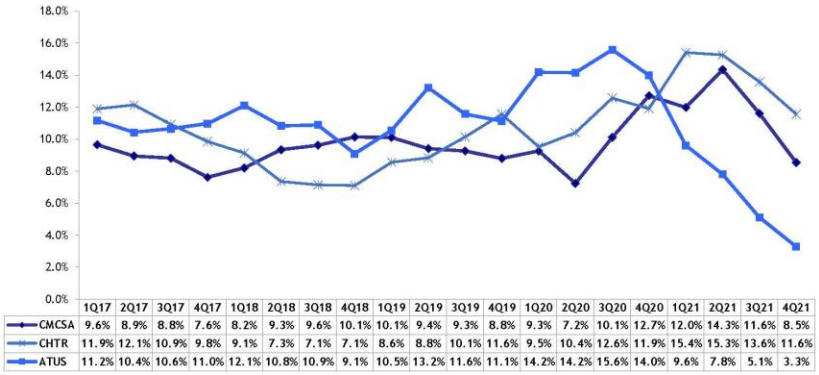
| ARPU Growth - Cable | 67 |
| ARPU Growth - Telco | 68 |
| Subscriber Growth - Cable | 69 |
| Subscriber Growth - Telco | 70 |
| Net Adds - Cable | 71 |
| Net Adds - Telco | 72 |
| Penetration of Homes Passed - Cable | 73 |
| Penetration of Homes Passed - Telco | 74 |

## Residential Broadband Revenue Growth (y/y) – Cable

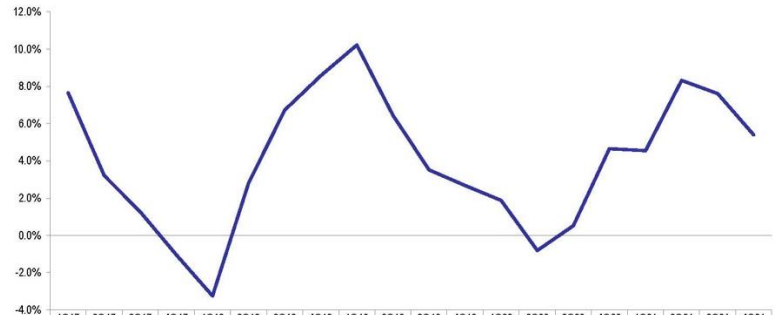



| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMCSA | 9.6% | 8.9% | 8.8% | 7.6% | 8.2% | 9.3% | 9.6% | 10.1% | 10.1% | 9.4% | 9.3% | 8.8% | 9.3% | 7.2% | 10.1% | 12.7% | 12.0% | 14.3% | 11.6% | 8.5% |
| CHTR | 11.9% | 12.1% | 10.9% | 9.8% | 9.1% | 7.3% | 7.1% | 7.1% | 8.6% | 8.8% | 10.1% | 11.6% | 9.5% | 10.4% | 12.6% | 11.9% | 15.4% | 15.3% | 13.6% | 11.6% |
| ATUS | 11.2% | 10.4% | 10.6% | 11.0% | 12.1% | 10.8% | 10.9% | 9.1% | 10.5% | 13.2% | 11.6% | 11.1% | 14.2% | 14.2% | 15.6% | 14.0% | 9.6% | 7.8% | 5.1% | 3.3% |

Source: Company Data, NSR estimates.



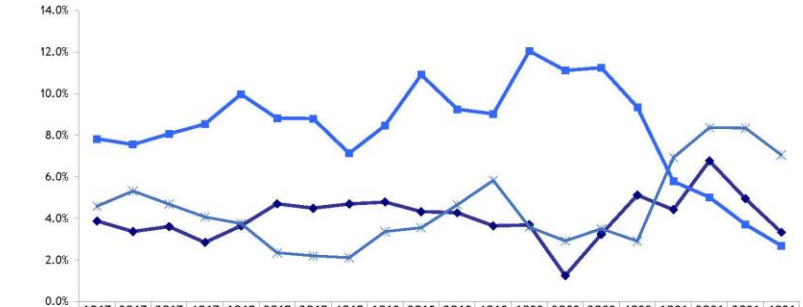
## Residential Broadband Revenue Growth (y/y) – Telco




| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T | 7.7% | 3.2% | 1.3% | -1.0% | -3.2% | 2.8% | 6.7% | 8.6% | 10.2% | 6.5% | 3.5% | 2.7% | 1.9% | -0.8% | 0.5% | 4.7% | 4.6% | 8.3% | 7.6% | 5.4% |

Source: Company Data, NSR estimates.

## Residential Broadband ARPU Growth (y/y) - Cable

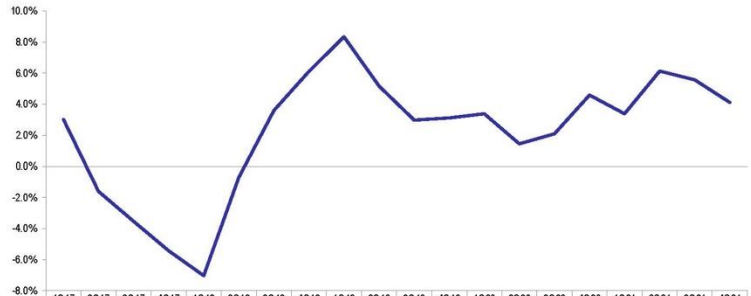



| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMCSA | 3.9% | 3.4% | 3.6% | 2.8% | 3.6% | 4.7% | 4.5% | 4.7% | 4.8% | 4.3% | 4.3% | 3.6% | 3.7% | 1.2% | 3.2% | 5.1% | 4.4% | 6.8% | 4.9% | 3.3% |
| CHTR | 4.6% | 5.3% | 4.7% | 4.1% | 3.7% | 2.3% | 2.2% | 2.1% | 3.4% | 3.5% | 4.6% | 5.8% | 3.6% | 2.9% | 3.5% | 2.9% | 6.9% | 8.4% | 8.3% | 7.0% |
| ATUS | 7.8% | 7.6% | 8.1% | 8.5% | 10.0% | 8.8% | 8.8% | 7.1% | 8.5% | 10.9% | 9.2% | 9.0% | 12.0% | 11.1% | 11.2% | 9.3% | 5.8% | 5.0% | 3.7% | 2.7% |

Source: Company Data, NSR estimates.



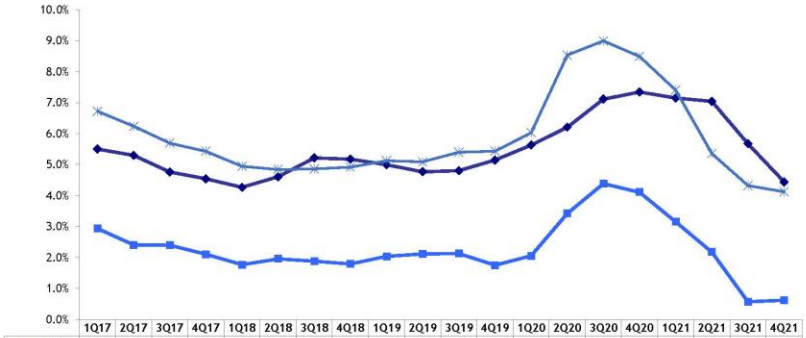
## Residential Broadband ARPU Growth (y/y) - Telco




| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T | 3.0% | -1.6% | -3.5% | -5.4% | -7.0% | -0.7% | 3.6% | 6.1% | 8.3% | 5.2% | 3.0% | 3.1% | 3.4% | 1.5% | 2.1% | 4.6% | 3.4% | 6.1% | 5.6% | 4.1% |

Source: Company Data, NSR estimates.

## Residential Broadband Subscriber Growth (y/y) – Cable

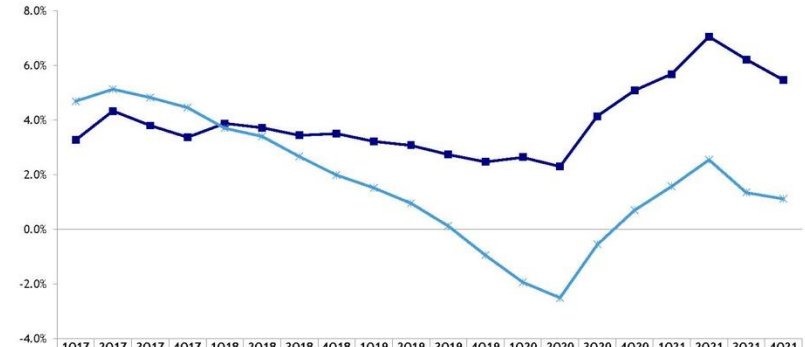



| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMCSA | 5.5% | 5.3% | 4.8% | 4.5% | 4.3% | 4.6% | 5.2% | 5.2% | 5.0% | 4.8% | 4.8% | 5.1% | 5.6% | 6.2% | 7.1% | 7.3% | 7.1% | 7.0% | 5.7% | 4.4% |
| CHTR | 6.7% | 6.2% | 5.7% | 5.4% | 4.9% | 4.8% | 4.9% | 4.9% | 5.1% | 5.1% | 5.4% | 5.4% | 6.0% | 8.5% | 9.0% | 8.5% | 7.4% | 5.4% | 4.3% | 4.1% |
| ATUS | 2.9% | 2.4% | 2.4% | 2.1% | 1.8% | 2.0% | 1.9% | 1.8% | 2.0% | 2.1% | 2.1% | 1.7% | 2.0% | 3.4% | 4.4% | 4.1% | 3.1% | 2.2% | 0.6% | 0.6% |

Source: Company Data, NSR estimates.



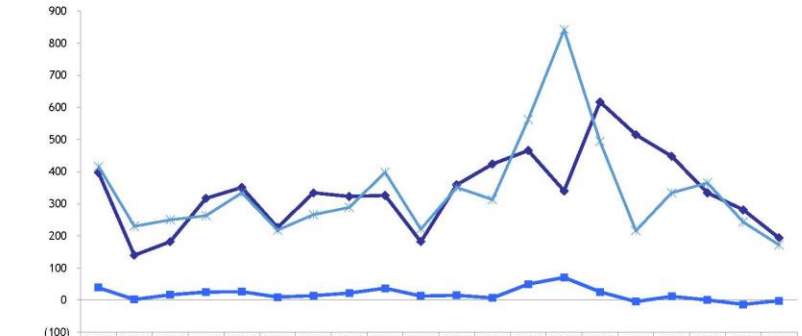
## Residential Broadband Subscriber Growth (y/y) – Telco




| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VZ | 3.3% | 4.3% | 3.8% | 3.4% | 3.9% | 3.7% | 3.4% | 3.5% | 3.2% | 3.1% | 2.7% | 2.5% | 2.6% | 2.3% | 4.1% | 5.1% | 5.7% | 7.1% | 6.2% | 5.5% |
| T | 4.7% | 5.1% | 4.8% | 4.5% | 3.7% | 3.4% | 2.7% | 2.0% | 1.5% | 0.9% | 0.1% | -1.0% | -1.9% | -2.5% | -0.6% | 0.7% | 1.6% | 2.5% | 1.3% | 1.1% |

Source: Company Data, NSR estimates.

## Residential Broadband Net Adds - Cable



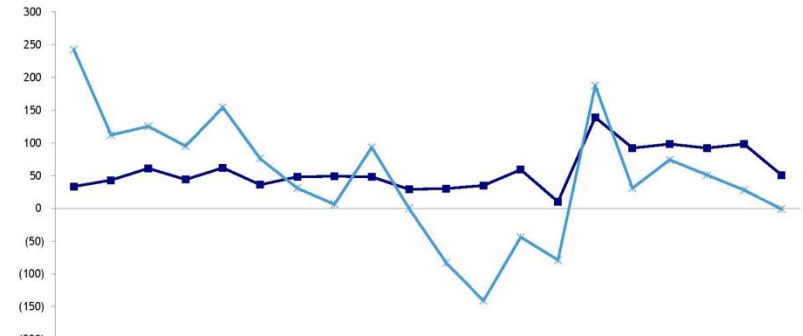

| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMCSA | 397 | 140 | 182 | 317 | 351 | 226 | 334 | 323 | 326 | 182 | 359 | 424 | 466 | 340 | 617 | 515 | 448 | 334 | 281 | 194 |
| CHTR | 416 | 230 | 250 | 263 | 334 | 218 | 266 | 289 | 398 | 221 | 351 | 313 | 563 | 842 | 494 | 216 | 334 | 365 | 243 | 172 |
| ATUS | 39 | 2 | 17 | 25 | 26 | 10 | 14 | 22 | 37 | 13 | 15 | 7 | 50 | 70 | 26 | (4) | 12 | 0 | (13) | (2) |

Note: ATUS residential broadband net adds for 3Q20 and 2Q21 adjusted for Service Electric and Morris acquisitions, respectively

Source: Company Data, NSR estimates.



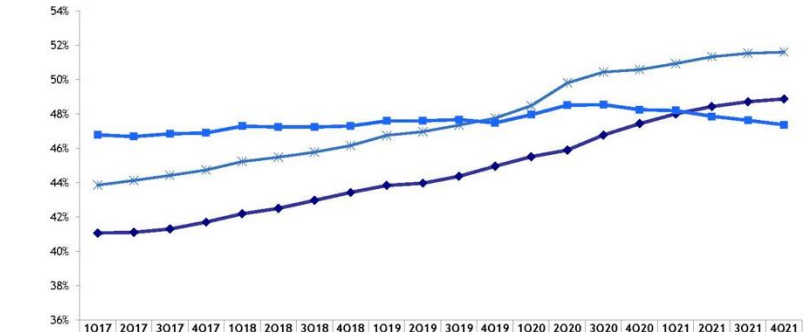
## Residential Broadband Net Adds - Telco




| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VZ | 33 | 43 | 61 | 44 | 62 | 36 | 48 | 49 | 48 | 29 | 30 | 35 | 59 | 10 | 139 | 92 | 98 | 92 | 98 | 51 |
| T | 242 | 112 | 125 | 95 | 154 | 76 | 31 | 6 | 93 | 0 | (83) | (141) | (44) | (79) | 187 | 31 | 74 | 51 | 28 | (1) |

Source: Company Data, NSR estimates.

## Residential Penetration - Cable

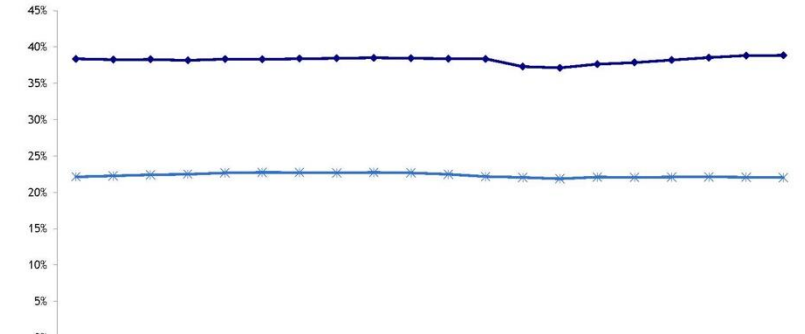



| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CMCSA | 41% | 41% | 41% | 42% | 42% | 42% | 43% | 43% | 44% | 44% | 44% | 45% | 46% | 46% | 47% | 47% | 48% | 48% | 49% | 49% |
| CHTR | 44% | 44% | 44% | 45% | 45% | 45% | 46% | 46% | 47% | 47% | 47% | 48% | 48% | 50% | 50% | 51% | 51% | 51% | 52% | 52% |
| ATUS | 47% | 47% | 47% | 47% | 47% | 47% | 47% | 47% | 48% | 48% | 48% | 47% | 48% | 49% | 49% | 48% | 48% | 48% | 48% | 47% |

Source: Company Data, NSR estimates.



## Residential Penetration - Telco




| | 1Q17 | 2Q17 | 3Q17 | 4Q17 | 1Q18 | 2Q18 | 3Q18 | 4Q18 | 1Q19 | 2Q19 | 3Q19 | 4Q19 | 1Q20 | 2Q20 | 3Q20 | 4Q20 | 1Q21 | 2Q21 | 3Q21 | 4Q21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VZ | 38% | 38% | 38% | 38% | 38% | 38% | 38% | 38% | 39% | 38% | 38% | 38% | 37% | 37% | 38% | 38% | 38% | 39% | 39% | 39% |
| T | 22% | 22% | 22% | 22% | 23% | 23% | 23% | 23% | 23% | 23% | 22% | 22% | 22% | 22% | 22% | 22% | 22% | 22% | 22% | 22% |

Source: Company Data, NSR estimates.

## Other Relevant Research

- **More Fiber Coming: New Plans; New Pricing (Read HERE)** – We looked at pricing comparisons for Cable and fiber in different markets. While the comparisons don't resolve the big question whether there is risk to broadband ARPU as competition rises, they do yield insight into how competition is impacting pricing dynamics in various markets.
- **Autumn for Broadband (Part IV)? (Read HERE)** – In this report, we took a closer look at how competition may have impacted some of the cable broadband trends in 4Q21.
- **More Fiber Coming: Implications of Updated Fiber Analysis for Frontier and Cable (Read HERE)** – We extended our fiber build analysis for Frontier in this report (we didn't have a view of subsidy-eligible homes in their footprint before). We also updated our view of exposure by MSO based on more granular data. We increased deployment costs for Frontier and folded in the upside from markets that should receive subsidies.
- **More Fiber Coming: A Closer Look at Lumen / Apollo (Read HERE)** – We updated our broadband market model to reflect new announcements on fiber builds, mainly for Lumen's sale of locations to Apollo. We identified 9.9MM homes in markets retained by Lumen and 2.3MM in markets sold to Apollo that can be upgraded to fiber. Our analysis suggests that there is a lot of upside for Lumen/Apollo and the incremental fiber build will slow Cable broadband sub growth even further.
- **Biden's Choice: Infrastructure Investment Or Lower Prices; Pick One (Read HERE)** – We analyze fiber deployment costs and returns nationally at the county level. We conclude that the administration could close the broadband gap with subsidies of $35-75BN. Funding competition in markets served by upgraded cable today is unlikely, and funding municipalities or imposing price controls would undermine the administrations broadband objectives.
- **Biden's Choice: Cable's Response (Read HERE)** – We established that cable operators are well positioned to upgrade their plant to 1/1.2 GHz with mid/high-split which should lead to substantially higher speeds on both, downstream as well as upstream. The cost of the upgrade will likely be covered by avoided node splits over time. It will allow them to remain competitive with fiber.



## Disclosures

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*All research is issued under the regulatory oversight of New Street Research LLP.*

# Call Notes: June 2, 2022
# Subject: CTAM Competition + Retention Working Group Call

## Welcome/Roll Call

Call Attendees:

Altice – Scott Meador
Cable One – David Ballew
Charter – Jamie Anzellotti
Comcast – Ken Flynn
Comcast – John Hewson
Comcast – Sarah New
Cox – Bruce Berkinshaw
Cox – Anthony DeFilippo
Cox – Tony Maldonado
Mediacom – Dianne Schanne
Mediacom – Eric Schoenfeldt
CTAM – Mark Snow, Deepa Venkataraman + Renee Harris

## Guest Speaker: Jonathan Chaplin, New Street Research

Jonathan Chaplin, New Street Research, presented the attached "State of the Cable Industry 2022" deck which summarizes New Street's viewpoint of the near- and long-term competitive impacts from Fiber and Fixed Wireless competition.

Highlights include:

- Fiber will pass more locations than expected this decade.
    - Carriers have announced plans to pass an additional 41M locations.
    - Government subsidies will take fiber further still.
    - By 2030, it is estimated that 80% of the country will be passed by fiber.
- By 2030, most markets will be gigabit capable and competitive.
- The struggle for cable companies over the next decade will be perception to consumers.
    - Fiber's speeds above 1 to 2 GB are beyond what consumers will necessarily need, but they will look superior to cable from a perception standpoint; that along with price parity, will make it more competitive.
    - New Street's view, from a competitive perspective, is that higher speeds probably do not matter for consumers in place, it matters more to those actively shopping more.
- DOCSIS 3.1, 4.0 keep Cable ahead of the use curve for most consumers, but there's always a risk of a "Black Swan" scenario that would push bandwidth needs faster than Cable's roadmap (except for those MSOs rolling out fiber broadly).
- Regarding Fixed Wireless Broadband (FWB), New Street believes FWB will take 8% of the broadband market by 2025.
    - The reason FWB will not take more of the market is because there is limited capacity, and that capacity isn't evenly available across their passings.
    - FWB will do best in DSL only areas
    - There are also incentives to not let FWB grow at the expense of mobile: mobile carriers make 40x more revenue per gigabit selling that capacity as mobile broadband than they do selling it as FWB.

    - Given current spectrum portfolios, New Street believes they have capacity to support 17M subs overall. In addition, when you factor in market share expectations across the mix of competitive and less competitive areas, the total subscriber ceiling for FWB in Cable market areas is around 7 million subs.
- There is another form of Fixed Wireless to be concerned about and that is mmWave.
    - MmWave can deliver a gigabit per second and does not have the same sort of capacity restraints as 5g FWB.
    - The challenge with leveraging mmWave spectrum is that it only travels a few hundred feet and fiber is needed to use the spectrum which means the cost of deploying spectrum is not that different than deploying fiber so it will only work in a limited number of circumstances.
- For 2022, New Street believes:
    - The broadband industry growth will remain elevated with a lot of growth coming from the business market and the FWB market. New Street believes the FWB product is drawing wireless only HHs into the market for broadband at a faster rate than historically.
    - Fiber will ramp at a slow, steady pace as deployments increase.
    - FWB is more difficult to predict but net adds are expected to accelerate now and then taper as they approach their cap.
    - DSL losses are also difficult to predict but losses are expected to reaccelerate as FWB takes its share and moves begin to pick back up
    - All this leaves 1.1-1.5 million net adds for cable (vs. 2.65 in 2021 and 2.98 in 2019)

<u>Questions from the group</u>

1. Regarding the anticipated growth this year with fixed wireless, and the curve shown in the presentation, do you anticipate big growth in Q1, another in Q2 and then goes flat in Q3 + Q4?

    *Yes, New Street is tracking app downloads for T-Mobile, and NSR knows they have a big Q2 coming. Q3 + Q4 are a guess assuming that the FWB will eventually be a high churn product.*

2. Is there any other key strategy on behalf of T-Mobile and Verizon in fixed wireless mid band? What are their drivers strategically?

    *There are 4 elements to their strategy– monetization of the network, retaliation for cable's foray into wireless, which is causing them pain, and specifically T-Mobile wanting cable to buy them and lastly, T-Mo just spent $95 billion on spectrum, and they need to justify that to their investors.*

3. What do you see in the impact of decommissioning of DSL, and do you see them ramping up their fixed wireless?

    *New Street's regulatory analyst believes there is no way to decommission DSL. They have a difficult narrative to get past regulators.*

4. Regarding Lumen, they are divesting a large portion to Apollo Global, what do you see the impact of Bright Speed being?

    *Bright Speed is looked at as a mini-Frontier. While they have yet to be seen in action being a brand-new management team, New Street would assume they will be successful – they have good financial sponsors – a treasure throve of ex-Verizon executives.*

5. Regarding New Street's long-term view, what are the implications for Fiber if 80% of the US is covered by fiber? Does this mean for cable that the only way to fight fiber is with fiber?

   *This question is unanswered – everyone is guessing as of now. The reason to upgrade DOCSIS 4.0 to fiber could be two reasons – first, if HHs need 10 gigabits per second and that could not be done effectively with DOCSIS 4.0. The second would be is purely due to the marketing advantage fiber has. New Street's assumption is that MSOs could compete just fine with a DOCSIS 4.0 plan with being able to offer peer or near peer download speeds to fiber and for those MSOs selling wireless at an aggressive price, they have an additional advantage.*

   *New Street believes there's one area MSOs need to be attentive to and that is if it appears cable companies are having a hard time holding 50% market share in markets with fiber because of the perception that fiber is better. If that is the case, it will need to be addressed. This happened when AT&T did their first build-out. For MSOs who do not have a wireless product, the competitive dynamics will be tougher. New Street believes wireless is a critical piece of the portfolio for MSOs.*

6. Regarding Dish striking a MVNO deal with AT&T, do you see this as a good option for MSOs who are not currently in an MVNO?

   *New Street believes any MSO who does not have a MVNO should approach all 3 carriers and get the best deal they can. With Dish it was an unusual situation as they had 10M customers they bought out of Sprint, so they held the cards and got a great MVNO out of T-Mobile and then AT&T. With that said, it will be difficult for anyone to replicate the Dish deal with AT&T.*

7. Is there any data or research pointing to Fixed Wireless subscribers using the $25-$20 bundle rate to supplement their existing broadband rate versus the total displacement of fixed home internet?

   *There is not a lot of data at this stage because the product is in its infancy. What they are seeing in the business market is a lot of Fixed Wireless broadband subscriptions coming from two areas – food trucks and back up connections. Jonathan's personal view is that the cable industry has poured money into improving customer care, customer experience and brand perception and there has been an improvement in NPS scores but not enough as they are still much lower than wireless. Jonathan believes this may be due to introductory pricing promotions cable companies offer customers and then the price of the product doubling after a couple years after the promotion. This creates unnecessary churn (or churn potential waiting to be unlocked when competition does come to a market). Jonathan believes the mistake the industry is making, and the effect will be felt as fiber comes to various markets and unfreezes this cohort of angry customers who had nowhere else to go before.*

8. Regarding Verizon, they recently broke out into B2B Fixed wireless just last quarter, but T-Mobile hasn't. Recently you indicated that T-Mobile had 15% for B2B, how did you get to that percentage for T-Mobile and why is it lower than Verizon's?

   *The 15% would be characterized in the mid-teens – it's not a precise number. Verizon has a much larger share in B2B than T-Mobile does today.*

## Closing + Call Cadence

In closing, CTAM noted that Phil McKinney of Cable Labs shared that there is room to market our HFC/DOCSIS network's fiber component. For instance, Shaw's Fibre+ program in Canada. While Telus sued Shaw for using Fibre+ and related fiber messaging, CableLabs testified at trial that 99.7% of the time data was passing on the network between end points, it was on fiber. They won that case. They also helped operators in Australia and Spain win similar cases. McKinney's point is that MSOs should not be afraid in speaking about the "fiber-ness" of our massive HFC networks.

CTAM asks if cable can be braver in touting the "fiber-ness" of our network…

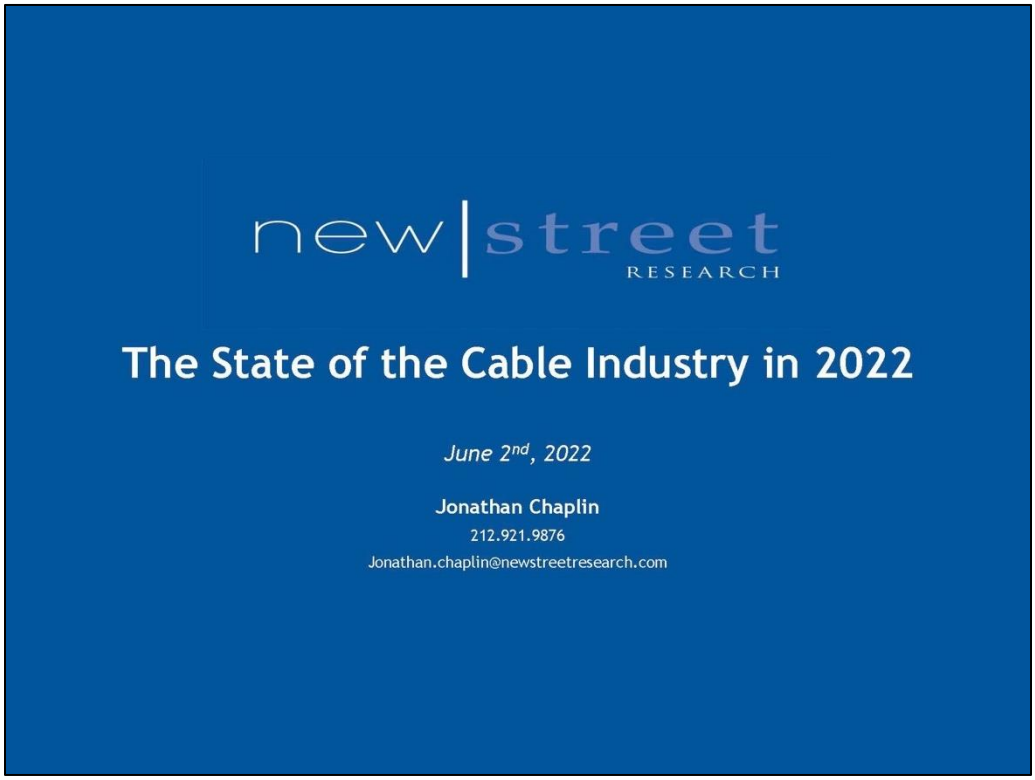
> *There are certainly ways to market around the technical advantages that fiber has – the better-ness of fiber does not really matter – consumers do not need a gigabit per second much less 2, 5 or 10 – we're not dealing with a functional disadvantage, it is branding disadvantage.*
>
> *New Street just completed a consumer survey and that revealed that 30% of people have no idea what speed they are on and among the ones who think they know, they really don't know either. Among FWB respondents in the survey around 20% thought they were getting a gigabit for second. That's not possible. Even with DSL, the preponderance of consumers are satisfied with their speeds. This tells us that functionally speeds do not matter. Consumers do not know what speeds they are on so as long as the network does not go out or what they are doing disrupts (streaming, surfing, gaming), they are content with what they have. The speeds only matter when things go wrong and at the point of sale where consumers are given an option of a higher speed when comparing offers.*
>
> *Jonathan suggests that perhaps the strategy is to get away from marketing speeds and coming up with a way to drive home value of the different tiers. Look at use cases, etc.*

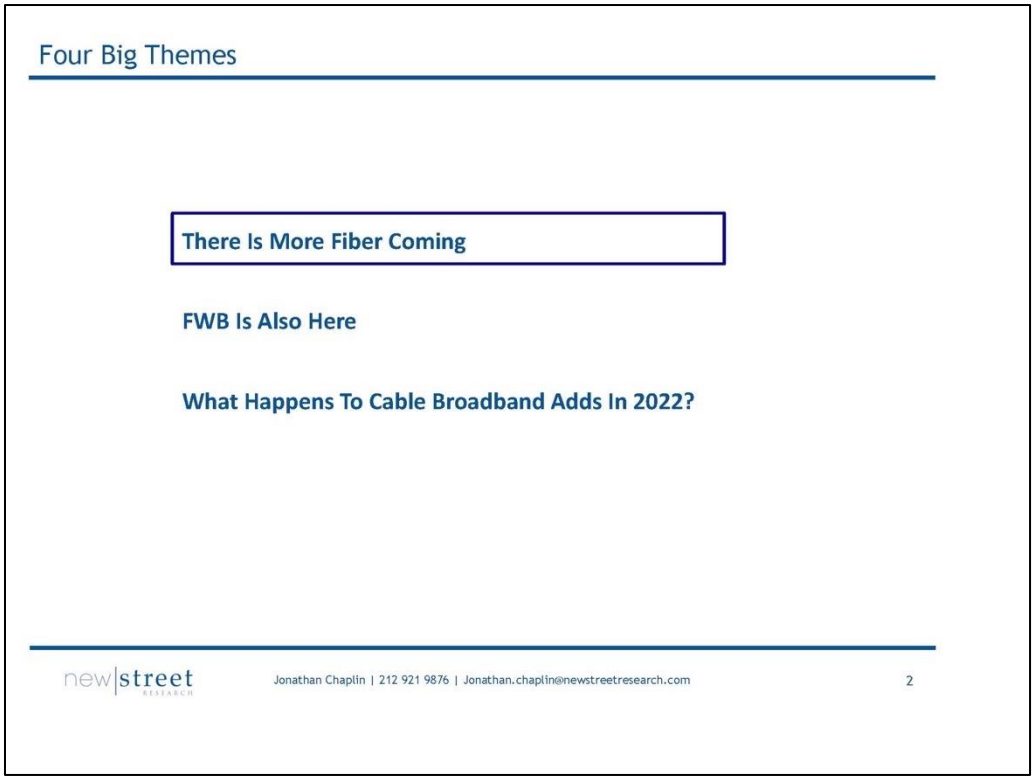
If there are any additional questions for Jonathan or you would like to be added to New Street's distribution list, please contact Mark Snow.

<u>Call Cadence</u>

- Meeting invites for monthly calls to be held at 10:00 a.m. ET, the first Thursday of each month through September, have been sent to the group. Please contact Renee Harris if you do not have the invite.

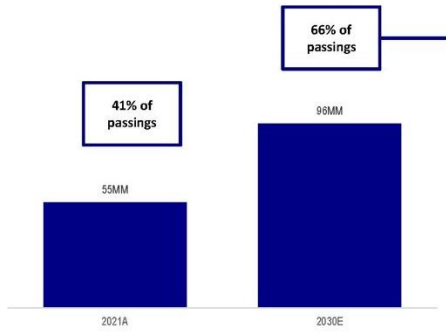
Presentation: *The State of the Cable Industry in 2022*



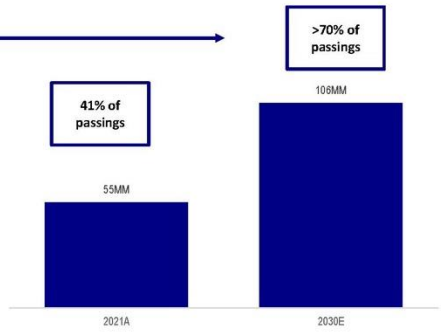



## Fiber will pass more locations than we'd expected this decade…

**Share of Locations Passed With Fiber; NSR Estimate Before the FTTF Conference**
*Millions of locations; %*




**Share of Locations Passed With Fiber; NSR Estimate After the FTTF Conference**
*Millions of locations; %*




Source: NSR analysis



## …with every operator suggesting they could exceed current target

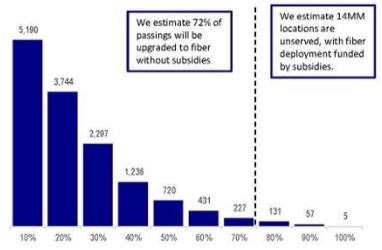
**Fiber Locations by Operator - Prior Estimates**
*Millions of incremental locations passed by fiber*


**Fiber Locations by Operator - Potential New Estimates**
*Millions of incremental locations passed by fiber*

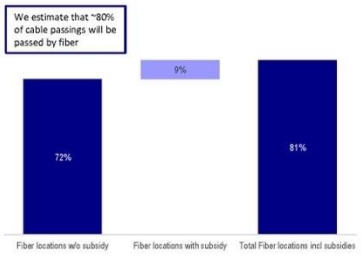

Source: NSR analysis

## Government subsidies will take fiber further still

**Split Of Households By Type Of Market - 2030**
*X-axis: % of households; y-axis: households per square mile*




**Share of Locations Passed With Fiber, including with Subsidies - 2030**
*%*

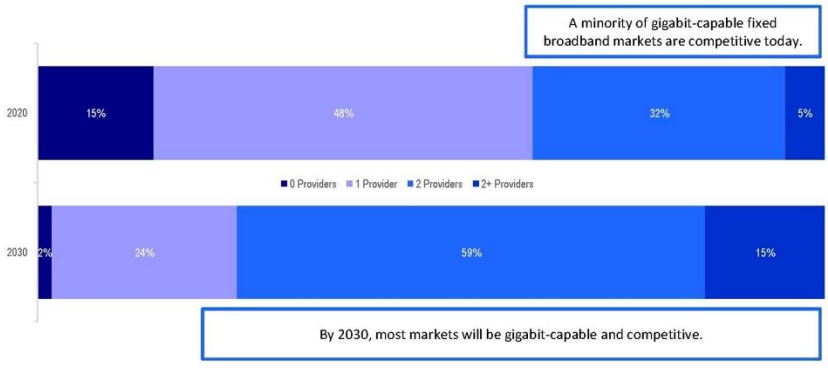



Source: NSR analysis



## Most markets will see two competitive fixed broadband players

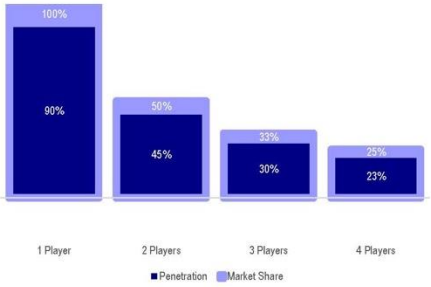
**Gigabit Capable Broadband Markets by # of Providers**
*% of markets with 0, 1, 2 gigabit providers*



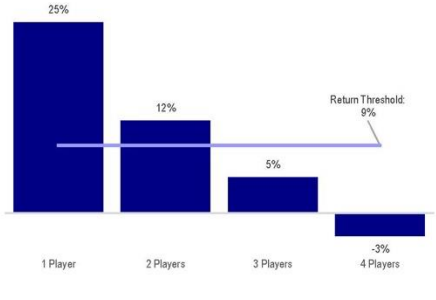

Source: NSR analysis

## Two operators can earn strong returns; three operators can't

**Terminal Share by Number of Players in Market**
*% of locations passed captured by player*




**IRRs Sensitized to Players in Market**
*%*




Source: NSR analysis



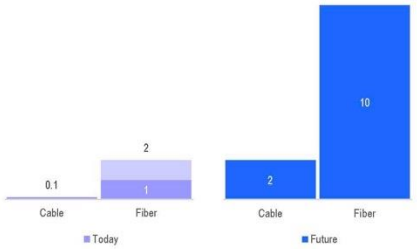
## Is there too much fiber coming?

**Dow Jones Telecommunications Index**
*Index peak set to 100*

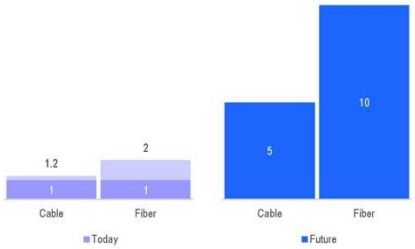

Source: NSR analysis

## Fiber will have a performance advantage…

**Commercially Deliverable Upstream Speeds**
*Gbps by technology*




**Commercially Deliverable Downstream Speeds**
*Gbps by technology*

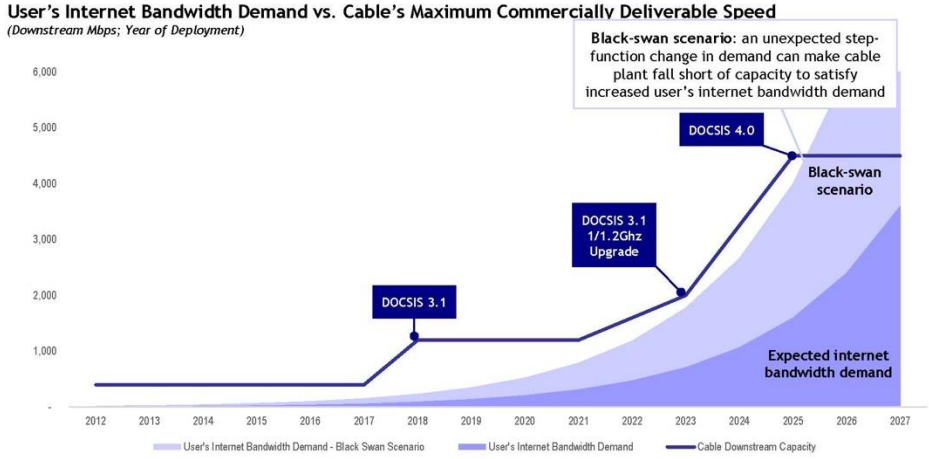



Source: NSR analysis



## …but Cable will be fine as long as demand grows predictably

**User's Internet Bandwidth Demand vs. Cable's Maximum Commercially Deliverable Speed**
*(Downstream Mbps; Year of Deployment)*




Source: NSR Analysis

There Is More Fiber Coming

**FWB Is Also Here**

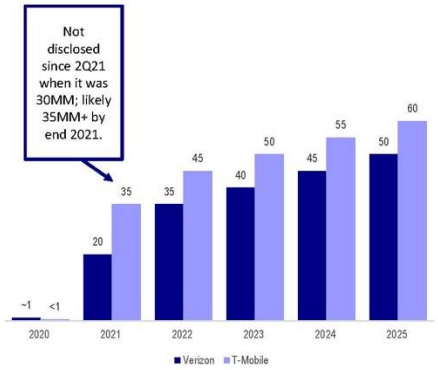
What Happens To Cable Broadband Adds In 2022?



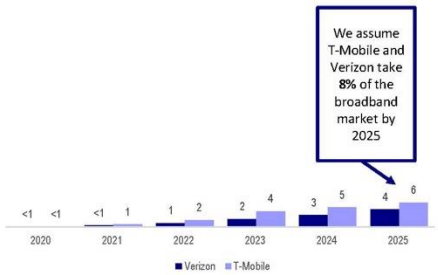
*We recognize two versions of fixed wireless broadband (FWB)*

## The first version is on spectrum <6GHz (from T-Mobile & Verizon)

**TMUS/VZ Fixed Wireless Broadband Passings**
*Millions of homes*




**TMUS/VZ FWB Subscribers**
*Millions of subscribers*

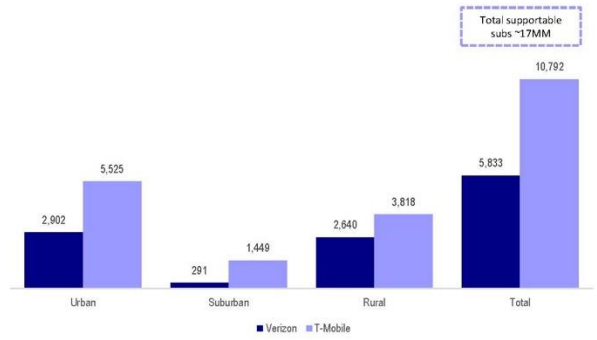



Source: NSR analysis



## Capacity is limited for this version of FWB

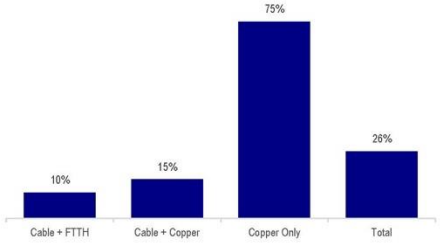
**Supportable Home Broadband Subscribers With Excess Capacity**
*Subscribers in thousands*



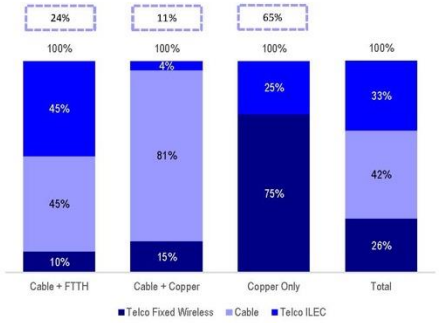

Source: NSR analysis

## Demand will also be limited for this version of FWB

**Fixed Wireless Broadband terminal Market Share**
%




**Fixed Broadband Market Share**
%

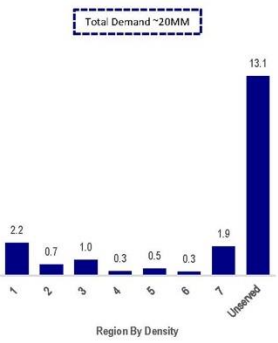



Source: NSR analysis

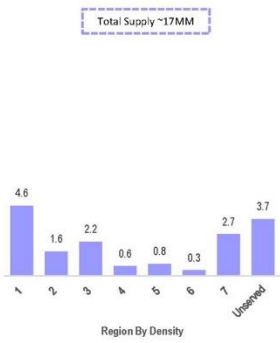


## Putting these two together, we anticipate subs of just 11MM

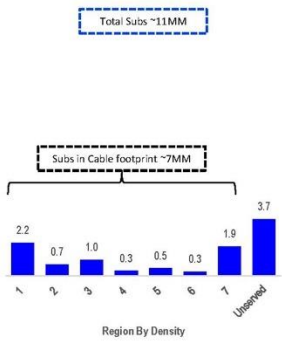
**Fixed Wireless Broadband Demand By Region**
*Subscribers in millions*




**Fixed Wireless Broadband Supply By Region**
*Subscribers in millions*



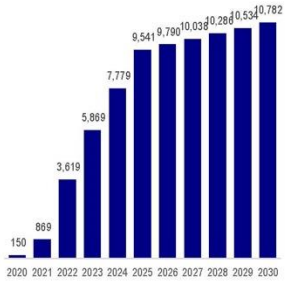

**Fixed Wireless Broadband Subscribers By Region**
*Subscribers in millions*



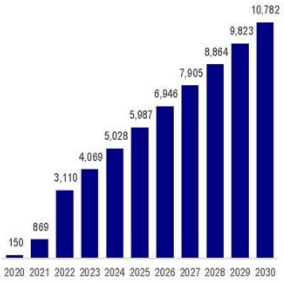

Source: NSR analysis

## The pace doesn't matter much – three scenarios for FWB adds

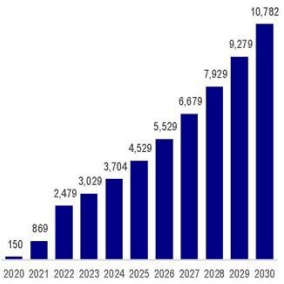
**FWB Subs - Scenario 1**
*Subscribers in thousands*




**FWB Subs - Scenario 2**
*Subscribers in thousands*



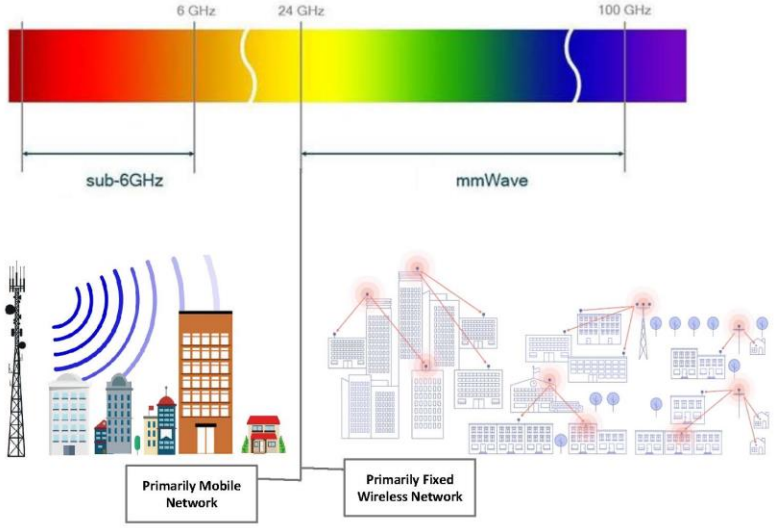

**FWB Subs - Scenario 3**
*Subscribers in thousands*




Source: NSR analysis



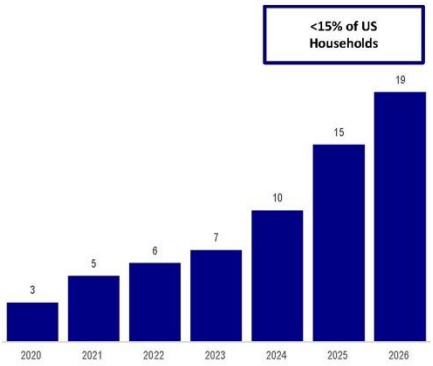
## The second flavor is on spectrum >6GHz (mmWave)



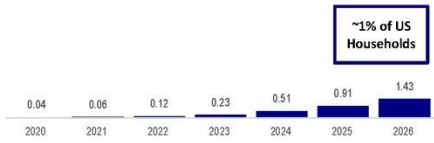

Source: NSR analysis

## The only reason the latter isn't disruptive today is because of scope

**Starry Footprint Expansion Plans**
*Millions of serviceable passings*




**Starry Mgmt. Projections for Subscribers**
*Millions of subscribers*



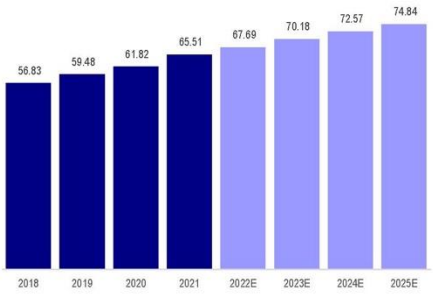

Source: NSR analysis



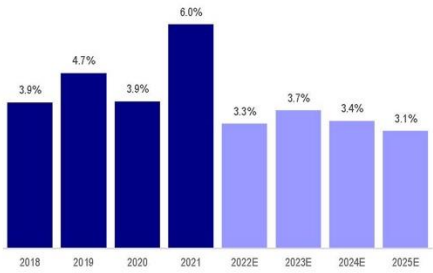
## There is little risk to market pricing, especially from FWB

## Operators and investors expect growing ARPU

**Cable Broadband ARPU - 2018 to 2025E**
*$ per subscriber per month*




**Cable Broadband ARPU Growth - 2018 to 2025E**
*%*

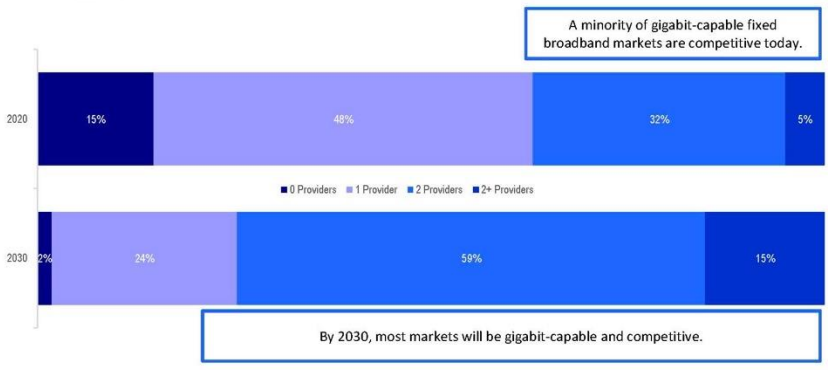



Source: NSR analysis



## One-player and two-player markets should have robust pricing

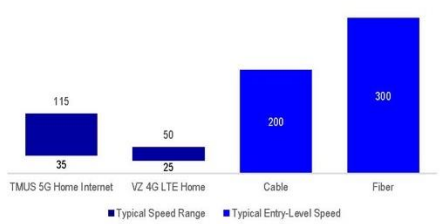
**Gigabit Capable Broadband Markets by # of Providers**
*% of markets with 0, 1, 2 gigabit providers*



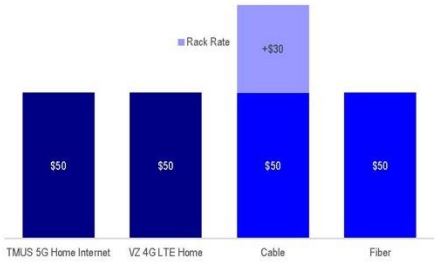

Source: NSR analysis

## Most FWB isn't competitive, so doesn't threaten pricing

**FWB Speeds Compared *Entry-Level* Cable and Fiber**
*Mbps*




**FWB Pricing Compared with Cable and Fiber**
*$ per month*




Source: NSR analysis; Company websites



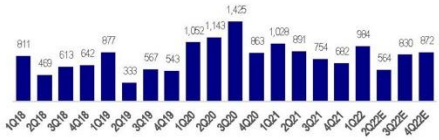
**There Is More Fiber Coming**

**FWB Is Also Here**

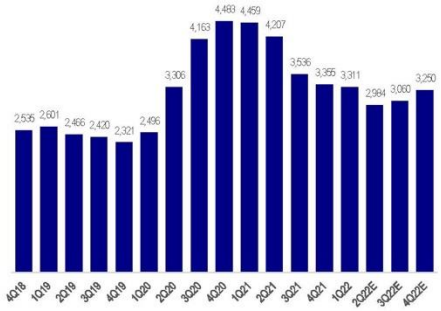
**What Happens To Cable Broadband Adds In 2022?**

## To start, we expect broadband industry growth to remain elevated

**Broadband Industry Net Adds**
*Subscribers in thousands*




**Broadband Industry Net Adds**
*Subscribers in thousands; TTM*

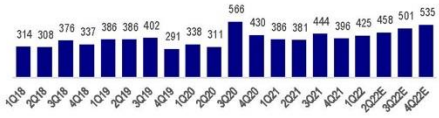



Note – All above reflect the 9 big Cable and Telecom companies that account for ~85% of the industry subscriber base and close to ~90% of net adds.
Source: Company data, New Street Research estimates

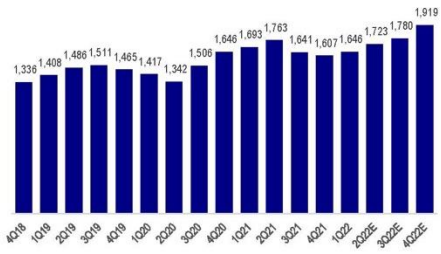


## We expect fiber net adds to accelerate

**Fiber Net Adds**
*Subscribers in thousands*



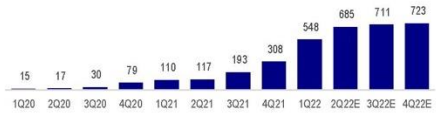

**Fiber Net Adds**
*Subscribers in thousands; TTM*



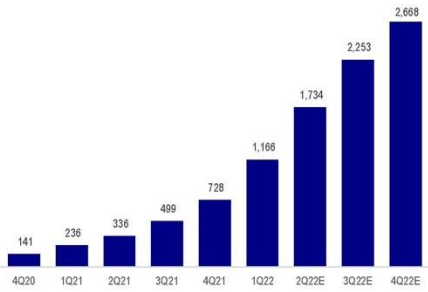

Source: NSR analysis

## We expect FWB net adds to accelerate

**FWB Net Adds**
*Subscribers in thousands*




**FWB Net Adds**
*Subscribers in thousands; TTM*

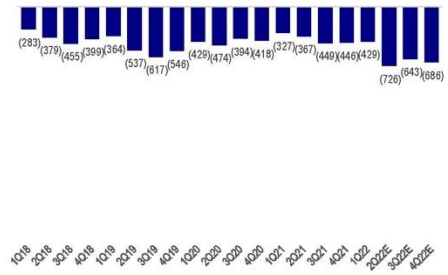



Source: NSR analysis

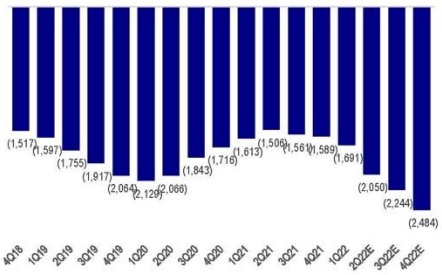


## We expect DSL losses to reaccelerate

**DSL Net Losses**
*Subscribers in thousands*



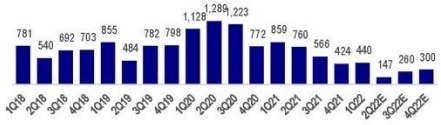

**DSL Net Losses**
*Subscribers in thousands; TTM*



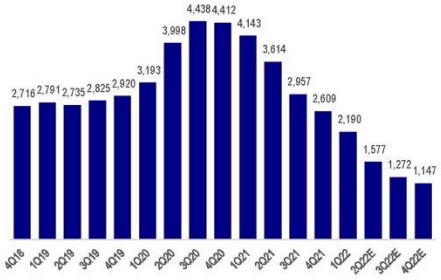

Source: NSR analysis

## This leaves 1.1MM adds for Cable (and a lot of uncertainty)

**Cable Net Adds**
*Subscribers in thousands*




**Cable Net Adds**
*Subscribers in thousands; TTM*




Source: NSR analysis



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# Thank You!


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# Call Notes: July 7, 2022
# Subject: CTAM Competition + Retention Working Group Call

## Welcome/Roll Call

Altice – Helene Pandal
Armstrong – Peter Grewar
Cable One – David Ballew, Isabelle Jazo
Charter – David Gray
Comcast – Kellye DeSantis, Stephanie Pearlman
Cox – Anthony DeFilippo, Tony Maldonado, Wendy Rosen
Mediacom – Dianne Schanne, Eric Schoenfeldt
CTAM – Mark Snow + Renee Harris

## Cox Presentation

Tony Maldonado, VP, Consumer Marketing Strategy, Cox, provided an overview of Cox's Internet Essentials Tier Launch and New Positioning Claims.

Highlights include:

- Cox has launched a new offer which is their Essential 100 Internet plan. The plan boasts up to 100 Mbps and is inclusive of Wi-Fi equipment. The plan is $49.99 per month and does not require a contract. This product addresses the largest brand pain points
- During the pandemic BB category expanded but now category is starting to shed. Cox believes two things are happening – 5G and Fixed Wireless
- Cox has several new Ookla claims that they intend to bring to market as soon as possible.
    - https://www.fiercetelecom.com/broadband/cox-had-fastest-median-download-speed-q2-nearly-200-mbps-ookla

Questions from the group

1. *Are there any insights on consumers interest in the new product?*

   While it's still very early, online, Cox has seen the Preferred tier come down a bit, but the new essential tier is outselling the older low-level tiers that were at 50 and 25 Mbps. Overall volume and sales mix/rate are up online. Previously, Cox offered a tier below the new Essential tier called Starter at 25 Mbps and was sold on promo for $30. Cox's Preferred tier is at 250 Mbps for $60. Cox also offers a $30 for the ACP program called Connect Assist which offers 100 Mbps but customers must qualify for ACP in order to utilize that plan.

   Bottom line is that Cox's lowest tier is now 100 Mbps.

## Mediacom Presentation

Dianne Schanne VP, Acquisition Marketing, Mediacom, provided an overview of Retention efforts.

Highlights Include:

- Mediacom is continuing to provide pro-active promo roll off and reactive customer-initiated contact/complaint retention.
- Mediacom has created new program principles for customer call ins looking to negotiate their pricing:
    - Offer re-package faster internet

    - Sell-in value of streaming for less
    - Removal of video and/or phone, if necessary
- For Rebundling:
    - Customers must upgrade to 400mbps to be eligible for a retention bundle
    - Data rates are discounted – video and phone are full rate
    - Rates in competitive markets are lower and step up to full rate over 4 years
- Mediacom also offers additional discounts for customers based on length of service if they meet HSD speed requirements.
    - HSD Migration
        - New approach implemented in month 3 saw shift to 400 Mbps
        - In months 4 & 5, 79.1% of speeds were 400 Mpbs and 1 Gig
- Mediacom has seen a lift in ARPU

Questions from the group

1. *How are you managing your network?*

   Mediacom is seeing Gig subscriptions go up but right now they are not concerned about the impact of the network as they still have a balanced portfolio. Mediacom's hope is they will be ready launch 2 Gig when they start seeing the market ready for those levels.

2. *Do you have any analytics around customer's retention using tenure-based discount?*

   Mediacom tries to give greater value to customers with greater tenure; however, some discounts are optional. For example, if a customer has been with Mediacom for 3 years, they may be eligible for a $15 reduction in MRC but if the customer is not asking for it, Mediacom is not compelled to offer it. The deduction is available if the customer pushes the rep for a lower price, but Mediacom is trying to sell is value and the goal is to get the customer to a price they are willing to pay. Currently, it is too early to have stats for how many times a $5 vs $15 discount is given to customers who qualify for $15.

## Network Positioning Examples: Revisiting Shaw's Fibre+

Fibre+ is Shaw's branding of their network. Previously, there was hesitancy on whether cable companies can use the word fiber and thus Telus sued Shaw. During the case, Cable Labs testified about a network test that found that 99.7% of the time, the bit crossing the network was on fiber. Shaw won the case. CTAM wonders if there is an opportunity now for cable companies to be more aggressive in using fiber in marketing. More to come once there is additional information from Shaw.

## Next Steps

For our next call, CTAM is looking for presenters for our August call. If any MSOs have any information they would like to share, please contact Mark Snow or Renee Harris.

# Call Notes: August 4, 2022
# Subject: CTAM Competition + Retention Working Group Call

## Welcome/Roll Call

Call Attendees:

Altice –Scott Meador
Cable One –Isabelle Jazo, Jim Obermeyer
Cox – Anthony DeFilippo, Tony Maldonado, Wendy Rosen
Mediacom – Dianne Schanne, Eric Schoenfeldt, David McNaughton
CTAM – Mark Snow + Renee Harris

## Network Positioning / Depositioning 5G Home Internet

During the CTAM Co-op Board meeting on July 12, the question arose again whether it is time to address network positioning relative to competitive threats including 5G Home Internet.

CTAM asked the group for guidance on how to approach positioning the cable broadband network vs. fiber and FWA. What approaches make the most sense: combined effort vs. best practices executed by each company separately? A combined effort with CTAM to push on the consumer and tech press?

CTAM notes that Spectrum is creating a consumer "facts" website and offered to share the content with CTAM.

Group Response

Cox notes that if the target is to address the press that covers telecom, then what CTAM is suggesting make sense, however, if the target is the consumer, the MSOs themselves should be handling that (in their voice with their branding). Cox states that while we like talking about our networks, they are not sure that customers make decisions because they believe the network is better. Cox believes consumers make decisions because of the value proposition so Cox wonders how much network positioning resonates with the end consumer anyway. Reliability and cost seem to be most important to consumers.

Mediacom agrees with Cox but also notes that in talking about value proposition, it has traditionally been about price and speed. Going forward, Mediacom believes the key part of the network message is reliability and security. Reliability is a problem with 5G so honing in on Cable's unmatched reliability should be a focus and perhaps MSOs could agree upon product points to support and work together to push those points.

CTAM further notes, prior analysts have advised that they believe speed matters to consumers at the sale, but reliability matters from that moment on. Cox + Mediacom agree with this notion.

## Bruce Leichtman: The State of Broadband Competition

Bruce Leichtman, President & Principal Analyst, Leichtman Research Group, provided an overview of the State of Broadband Competition.

Highlights include:

Broadband Internet Subscribers and net adds from top Cable and Wireline phone companies:

- At the end of 2021, top cable and wireline phone companies had about 108.4 million Broadband subscribers – up from 78.7 million at the end of 2011
- Net broadband adds of approx. 3 million in 2021 were more than in any year from 2016-2019
- At the end of the 2021, cable had about 75.7 million broadband subscriber's and Telcos had about 32.7 million broadband subscribers
- At the end of 2011, cable has about 45 million broadband subscribers and Telcos had about 33.7 million BB subscribers

Broadband Internet Subscribers for top Cable and Wireline phone companies, and Fixed Wireless services

- At the end of 1Q 2022, the top Cable and Wireline Phone companies and Fixed Wireless Services had about 109.3 million broadband subscribers
- At the end of 1Q 2022, top cable providers had a 69% market share vs. 30% for wireline phone, and 1% for fixed wireless – compared to 68% cable and 32% wireline phone at the end of 1Q 2020
- At the end of 1Q 2022, about 16.1 million wireline phone broadband subscribers were via fiber – a 37% penetration of the approximately 43 million fiber Passings for the top wireline phone companies
    - Top cable companies have about a 53% penetration of the approximately 130 million Passings (for top publicly reporting companies)

Top Broadband providers added about 3,600,000 subscribers over the past year – compared to about 4,900,000 net adds over the past year

- Top providers had about 2,750,000 net adds two years ago, and about 2,600,000 net adds three years ago

Top Broadband providers added about 1,065,000 subscribers in Q1 2022 – compared to about 1,120,000 net adds in Q1 2021

- Overall, broadband additions in Q1 2022 were 95% of those in Q1 2021
- The top cable companies added about 480,000 subscribers in Q1 2022 – 52% of the net additions for the top cable companies in Q1 2021
- The top wireline phone companies added about 50,000 subscribers in Q1 2022 – compared I about 80,000 net adds in Q1 2021
    - Telcos had about 480,000 net adds via fiber in Q1 2022 and about 430,000 non fiber net losses
- Fixed wireless/5G home internet services from T-Mobile and Verizon added about 530,000 subscribers in Q1 2022 – compared to about 110,000 net adds in Q1 2021
    - In Q1 2022, 50% of Verizon's fixed wireless subscribers are non-residential (T-Mobile does not break out residential vs non-residential)

In Q1 2022, Cable added about 480,000 broadband subs, Wireline Telcos added about 50,000 subs and Fixed Wireless added about 530,000 subs

- Over the past year, cable companies accounted for 65% of the approximately 3,600,000 net broadband adds
- Over the prior year, cable companies accounted for 92% of the approximately 4,900,000 net broadband adds

At the end of Q2 2022, T-Mobile and version cumulatively accounted for 2,244,000 fixed wireless broadband subscribers

- At the end of 2Q 2022, T-Mobile had 1,544,000 fixed wireless/5G home Internet subscribers
    - In 2Q 2022, T-Mobile added 560,000 subs – compared to 95,000 in 2Q 2021
- At the end of 2Q 2022, Verizon had 700,000 fixed wireless subscribers
    - 45% of Verizon's fixed wireless subscribers are non-residential
    - In 2Q 2022, Verizon added 256,000 subs – compared to 23,000 in 2Q 2021*

- In 2Q 2022, T-Mobile and Verizon added 816,000 fixed wireless subscribers – compared to 118,000 in 2Q 2021
    - In the first half of 2022, T-Mobile and Verizon added about 1,350,000 fixed wireless subscribers – compared to about 250,000 in the first half of 2021
    - Over the past year, T-Mobile and Verizon added about 1,840,000 fixed wireless subscribers – compared to about 360,000 over the prior year
- So, the big question is - where could all the subscribers be coming from? Leichtman notes that he does not have a lot of consumer data but in combining the data he does have and that MSOs state they are not seeing significant churn, then the subscribers must be coming from moves to a large degree. Verizon notes that 30% of their subscribers are new, "new" and most are existing subscribers and T-Mobile notes the same – the majority are T-Mobile wireless subscribers. Leichtman believes these new subscribers are young movers – possibly renters and Hispanic. There could also be DSL subscribers that have switched.

<u>87% of Households get an Internet service at home – slightly higher than in recent years</u>

- 87% of households use at least one laptop or desktop computer – 95% of this group get an internet
- 90% of ages 18-64 get an Internet service at home – compared to 73% of ages 65+
- 91% with annual household incomes >$30,000 get an Internet service at home – compared to 68% with incomes <$30,000

<u>20% of those not currently Online at home paid to subscribe to an Internet Service at home in the past year, while 54% have never subscribed</u>

- 2.6% of all households paid to subscribe to an Internet service at home in the past year, but currently do not – compared to 3.2% in 2016
    - 18% of households that do not get an Internet service at home plan to subscribe in the next six months
- 68% of those that do not use a laptop or desktop computer are not online at home – accounting for 67% of all not online at home
    - 42% that do not get an Internet service at home (and are not planning to subscribe) cite a lack of need as the main reason for not getting an Internet service at home, 19% cite the cost/expense, 12% cite availability issues, and 3% cite having access to the Internet via a mobile phone

<u>15% of Broadband Subscribers have been with their Provider for less than a year, and 48% for 5+ Years</u>

- 15% of cable broadband subscribers have been with their provider for <1 year – compared to 12% of Telco broadband subs
    - 72% of first-year broadband subscribers with a cable or Telco broadband service get cable
- 52% of first-year broadband subscribers are ages 18-34
- Movers account for 49% of those that have had their broadband provider for <1 year
- 21% of first-year broadband subscribers had no prior Internet service at home
- First-year broadband subscribers that had no prior Internet service at home account for 3% of all broadband households

<u>Overall, 60% are very satisfied with Their Broadband Service at Home, while 7% are not satisfied</u>

- 60% of cable broadband subscribers are very satisfied (8-10) – compared to 67% of Telco-fiber subs, and 58% of Telco non-fiber subs
- 63% of all broadband subscribers rate the speed of their Internet connection 8-10, while 7% rate it 1-3
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speeds <50 Mbps, and 58% that don't know their speed
    - 34% that experience latency weekly are very satisfied – compared to 62% that experience latency monthly, and 79% that never experience latency
- 11% of broadband subscribers are likely to switch in the next six months – compared to 12% in 2019, 12% in 2016, and 8% in 2011

77% of Households get Internet Service Both at Home and on a Mobile Phone – Compared to 66% in 2016

- 6% of households only get Internet service on a mobile phone – compared to 9% in 2018, and 6% in 2016
- Among those that only get Internet service on a smartphone:
    - The mean annual household income is $54,500 – 27% below the sample mean
    - The mean age is 45.8 – similar to 45.5 overall
    - Account for 10% of all renters – compared to 5% of homeowners
- 10% of households only get Internet service at home – compared to 17% in 2016
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72% of Broadband Households also get a Pay-TV Service

- 61% of broadband households get a traditional pay-TV service, and 11% get a vMVPD-only
- 28% of broadband households do not get a pay-TV service (including about 1.5% that do not use a TV)
    - In 2016, about 16% of broadband households did not get a pay TV service
- The mean age of adults with broadband and no pay-TV service is 40.8 – compared to 45.8 among those with broadband and pay-TV
    - 40% with broadband and no pay-TV are ages 18-34 – compared to 26% with broadband and pay-TV
    - Broadband and no pay-TV households have a mean annual income 14% below those with broadband and pay-TV

38% with Internet at home are very interested in getting Mobile phone service as part of a bundle, while 30% are not Interested

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- 46% that currently get a bundle are very interested in getting mobile phone service as part of a bundle – compared to 32% that do not get a bundle

Please email Mark Snow for any questions to send to Bruce.

**Next Steps**

- CTAM will begin developing an approach to message and influence tech and consumer press
- CTAM will also solicit sharable examples of creative executions and best practices from member MSOs who are messaging their broadband product beyond the traditional price/speed message.

Presentation: *LRG The State of Broadband Competition*

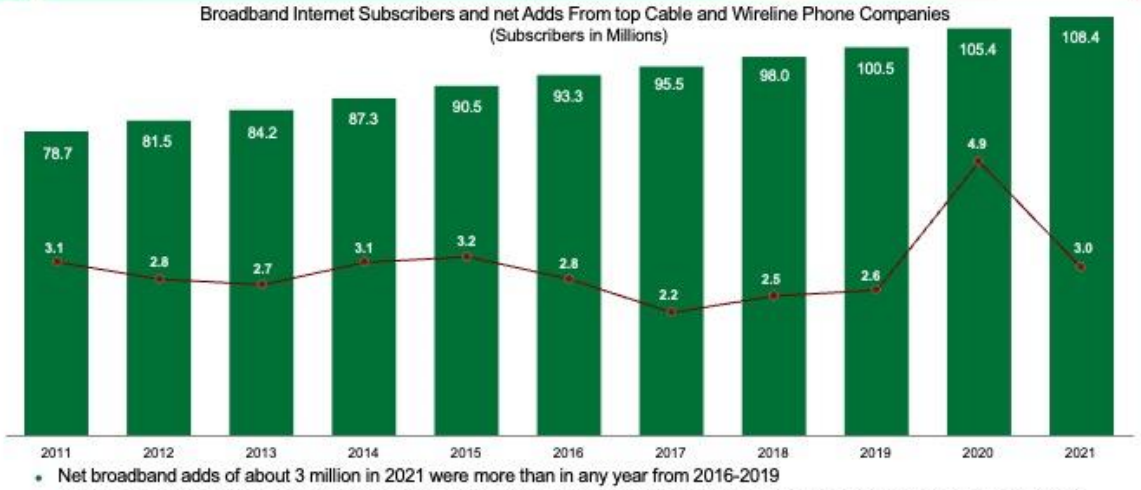
# The State of Broadband Competition

For CTAM

Bruce Leichtman
President and Principal Analyst
Leichtman Research Group, Inc.

August 4, 2022

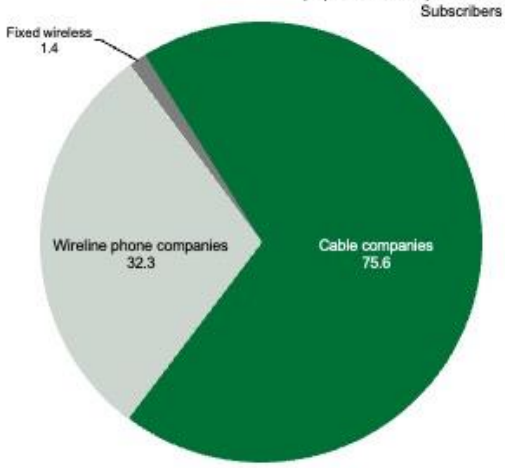
## At the end of 2021, top Cable and Wireline Phone Companies had About 108.4 Million Broadband Subscribers – up From 78.7 Million at the end of 2011




- Net broadband adds of about 3 million in 2021 were more than in any year from 2016-2019
- At the end of 2021, cable had about 75.7 million broadband subscribers and Telcos had about 32.7 million broadband subscribers
- At the end of 2011, cable had about 45 million broadband subscribers and Telcos had about 33.7 million broadband subscribers Top cable and telephone companies represent approximately 98% of all subscribers. Totals reflect pro forma results from system sales and acquisitions. About 6% of the total are non-residential. In addition, fixed wireless/5G home Internet services from T-Mobile and Verizon had 874,000 subscribers at the end of 2021 – including 719,000 net adds in 2021

## At the end of 1Q 2022, the top Cable and Wireline Phone Companies, and Fixed Wireless Services had About 109.3 Million Broadband Subscribers

Broadband Internet Subscribers for top Cable and Wireline Phone Companies, and Fixed Wireless Services*
(Top Providers Represent About 96% of the Total Market)
Subscribers in Millions



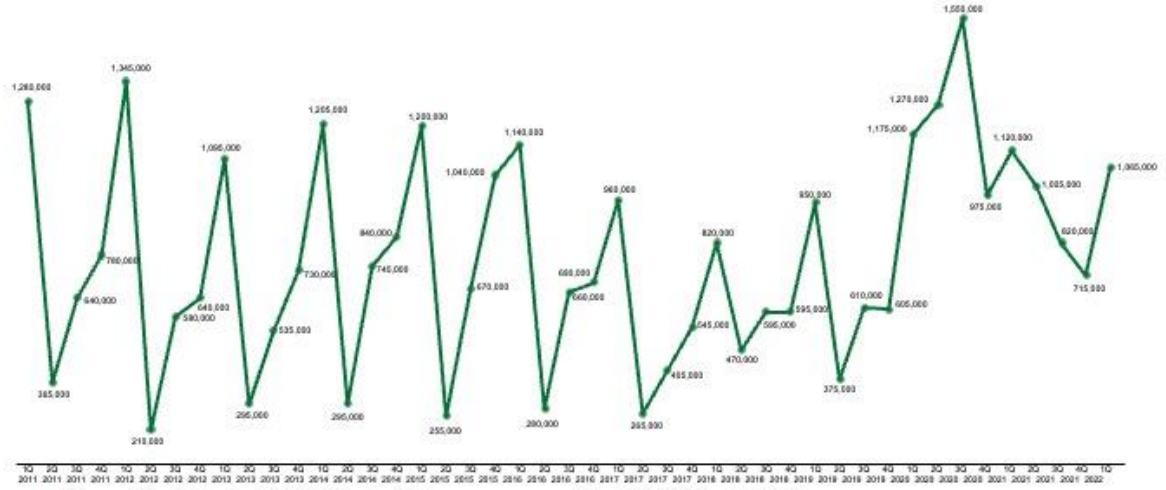

- At the end of 1Q 2022, top cable providers had a 69% market share vs. 30% for wireline phone, and 1% for fixed wireless – compared to 68% cable and 32% wireline phone at the end of 1Q 2020
- At the end of 1Q 2022, about 16.1 million wireline phone broadband subscribers were via fiber – a 37% penetration of the approximately 43 million fiber Passings for the top wireline phone companies
  - Top cable companies have about a 53% penetration of the approximately 130 million Passings (for top publicly reporting companies)

* Subscriber counts do not solely represent residential households. About 6% of the total are non-residential.
Includes LRG estimates of pro forma results from system sales and acquisitions, and reporting adjustments. Top provider list is changed from prior quarters.



## Top Broadband Providers Added About 3,600,000 Subscribers Over the Past Year – Compared to About 4,900,000 net Adds Over the Past Year

Broadband Internet Quarterly net Adds for top Cable and Wireline Phone Companies, and Fixed Wireless Services




- Top providers had about 2,750,000 net adds two years ago, and about 2,600,000 net adds three years ago

Based on results from the top broadband providers, representing about 96% of the overall market. Net additions reflect pro forma results from sales and acquisitions, and reporting adjustments.

## Top Broadband Providers Added About 1,065,000 Subscribers in 1Q 2022 – Compared to About 1,120,000 net Adds in 1Q 2021

| Broadband Providers | Subscribers at end of 1Q 2022 | Net Adds in 1Q 2022 | Net Adds in 1Q 2021 |
|---|---|---|---|
| **Cable Companies** | | | |
| Comcast | 32,163,000 | 262,000 | 460,000 |
| Charter | 30,274,000 | 185,000 | 355,000 |
| Cox* | 5,560,000 | 30,000 | 55,000 |
| Altice** | 4,373,200 | (13,000) | 11,500 |
| Mediacom* | 1,468,000 | 5,000 | 16,000 |
| Cable One** | 1,057,000 | 11,000 | 25,000 |
| Breezeline** | 719,608 | 2,830 | 9,000 |
| **Total Top Cable** | **75,614,808** | **482,830** | **931,500** |
| **Wireline Phone Companies** | | | |
| AT&T | 15,533,000 | 29,000 | 51,000 |
| Verizon | 7,400,000 | 35,000 | 64,000 |
| Lumen | 4,470,000 | (49,000) | (39,000) |
| Frontier | 2,819,000 | 20,000 | (14,000) |
| Windstream | 1,176,000 | 11,300 | 13,000 |
| TDS^ | 495,200 | 4,900 | 8,000 |
| Consolidated** | 380,150 | (850) | (3,300) |
| **Total Top Telco** | **32,273,350** | **50,350** | **79,700** |
| **Fixed Wireless Services** | | | |
| T-Mobile | 984,000 | 338,000 | 93,000 |
| Verizon | 433,000 | 194,000 | 17,000 |
| **Total Top Fixed Wireless** | **1,417,000** | **532,000** | **110,000** |
| **Total Top Broadband** | **109,305,158** | **1,065,180** | **1,121,200** |

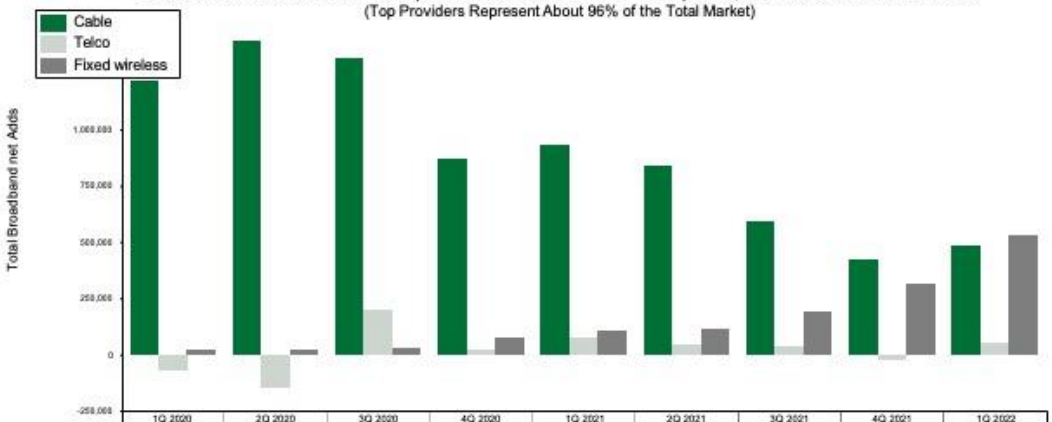
* LRG estimate ** Includes LRG estimates of pro forma net adds
^ TDS now only reports residential subscribers, includes 290,600 wireline subscribers and 204,600 cable subscribers
Company subscriber counts may not solely represent residential households – about 6% of the total are non-residential
Top broadband providers represent approximately 96% of all subscribers
Totals reflect pro forma results from system sales and acquisitions. Top provider list is changed from prior quarters.

- Overall, broadband additions in 1Q 2022 were 95% of those in 1Q 2021
- The top cable companies added about 480,000 subscribers in 1Q 2022 – 52% of the net additions for the top cable companies in 1Q 2021
- The top wireline phone companies added about 50,000 subscribers in 1Q 2022 – compared to about 80,000 net adds in 1Q 2021
  - Telcos had about 480,000 net adds via fiber in 1Q 2022, and about 430,000 non-fiber net losses
- Fixed wireless/5G home Internet services from T-Mobile and Verizon added about 530,000 subscribers in 1Q 2022 – compared to about 110,000 net adds in 1Q 2021
  - In 1Q 2022, 50% of Verizon's fixed wireless subscribers are non-residential (T-Mobile does not break out residential vs. non-residential)



## In 1Q 2022, Cable Added About 480,000 Broadband Subs, Wireline Telcos Added About 50,000 Subs, and Fixed Wireless Added About 530,000 Subs

Broadband Internet net Adds for top Cable and Wireline Phone Companies, and Fixed Wireless Services
(Top Providers Represent About 96% of the Total Market)



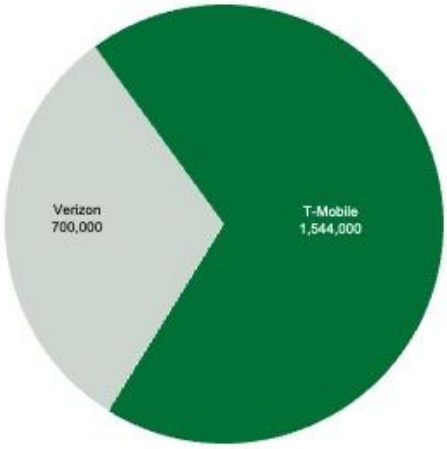

| | 1Q 2020 | 2Q 2020 | 3Q 2020 | 4Q 2020 | 1Q 2021 | 2Q 2021 | 3Q 2021 | 4Q 2021 | 1Q 2022 |
|---|---|---|---|---|---|---|---|---|---|
| Cable net adds | 1,221,100 | 1,398,400 | 1,319,000 | 868,700 | 931,500 | 839,200 | 590,800 | 427,878 | 482,830 |
| Telco net adds | -71,800 | -146,600 | 199,900 | 23,000 | 79,700 | 46,400 | 38,100 | -23,600 | 50,350 |
| Fixed wireless net adds | 25,000 | 20,000 | 29,000 | 81,000 | 110,000 | 118,000 | 189,000 | 313,000 | 532,000 |

- Over the past year, cable companies accounted for 65% of the approximately 3,600,000 net broadband adds
- Over the prior year, cable companies accounted for 92% of the approximately 4,900,000 net broadband adds

Subscriber additions do not solely represent residential households. Includes LRG estimates of pro forma results from system sales and acquisitions, and reporting adjustments.

## At the end of 2Q 2022, T-Mobile and Verizon Cumulatively Accounted for 2,244,000 Fixed Wireless Broadband Subscribers

Fixed Wireless Broadband Subscribers at the end of 2Q 2022



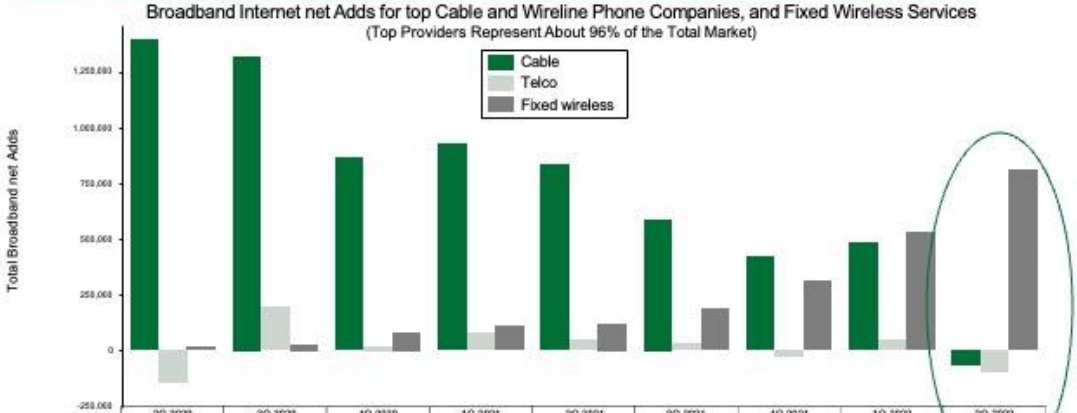

- At the end of 2Q 2022, T-Mobile had 1,544,000 fixed wireless/5G home Internet subscribers
  - In 2Q 2022, T-Mobile added 560,000 subs – compared to 95,000 in 2Q 2021
- At the end of 2Q 2022, Verizon had 700,000 fixed wireless subscribers
  - 45% of Verizon's fixed wireless subscribers are non-residential
  - In 2Q 2022, Verizon added 256,000 subs – compared to 23,000 in 2Q 2021*
- In 2Q 2022, T-Mobile and Verizon added 816,000 fixed wireless subscribers – compared to 118,000 in 2Q 2021
  - In the first half of 2022, T-Mobile and Verizon added about 1,350,000 fixed wireless subscribers – compared to about 250,000 in the first half of 2021
  - Over the past year, T-Mobile and Verizon added about 1,840,000 fixed wireless subscribers – compared to about 360,000 over the prior year

* Verizon adjusted net adds and totals from prior quarters



## Top Broadband Providers Added About 650,000 Subscribers in 2Q 2022 – Compared to About 1,000,000 net Adds in 2Q 2021

Broadband Internet net Adds for top Cable and Wireline Phone Companies, and Fixed Wireless Services
(Top Providers Represent About 96% of the Total Market)




| | 2Q 2020 | 3Q 2020 | 4Q 2020 | 1Q 2021 | 2Q 2021 | 3Q 2021 | 4Q 2021 | 1Q 2022 | 2Q 2022 |
|---|---|---|---|---|---|---|---|---|---|
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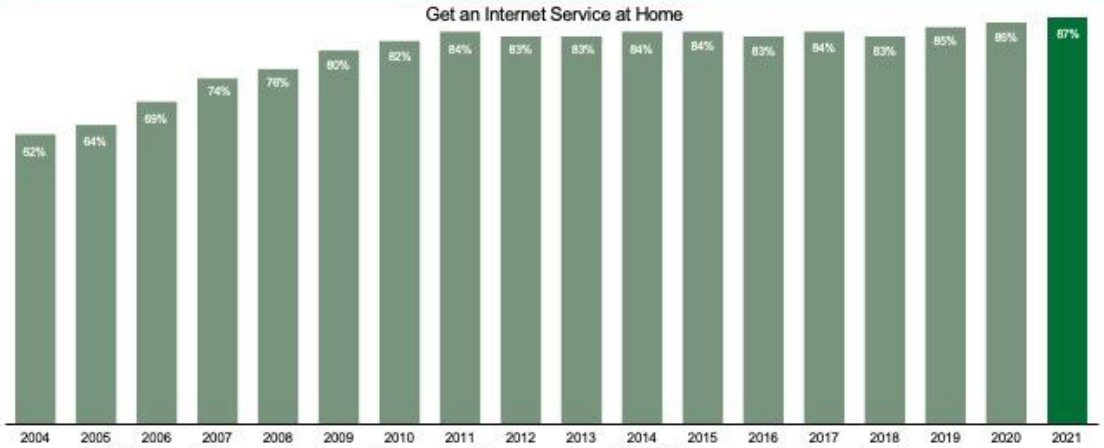
| Fixed wireless net adds | 20,000 | 29,000 | 81,000 | 110,000 | 118,000 | 189,000 | 313,000 | 532,000 | 816,000 |

- In 2Q 2022, fixed wireless added 816,000 subscribers, while cable lost about 65,000 subs, and Telcos lost about 100,000 subs
- Total net adds in 2Q 2022 were the lowest in any quarter since 4Q 2019
- Top providers had about 3,240,000 net adds over the past year, with cable accounting for 44% of the adds, and fixed wireless 57%

Subscriber additions do not solely represent residential households. Includes LRG estimates of pro forma results from system sales and acquisitions, and reporting adjustments.

## 87% of Households get an Internet Service at Home – Slightly Higher Than in Recent Years



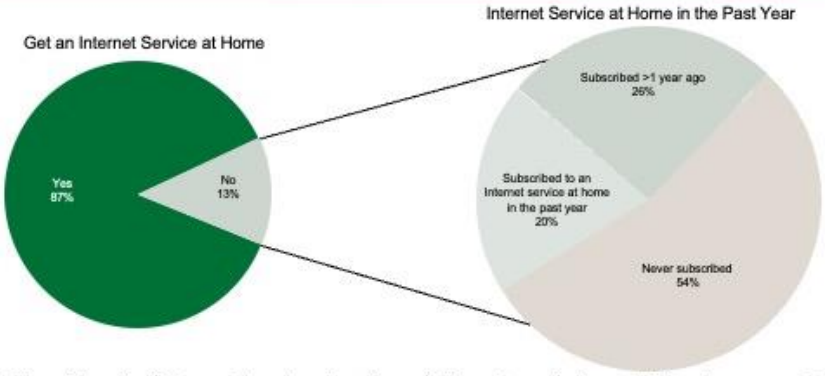

- 87% of households use at least one laptop or desktop computer – 95% of this group get an Internet service at home
- 90% of ages 18-64 get an Internet service at home – compared to 73% of ages 65+
- 91% with annual household incomes >$30,000 get an Internet service at home – compared to 68% with incomes <$30,000

*Do you currently get an Internet service at home – not including through a cell phone?* ("not including through a cell phone" added in 2015)

From LRG study *Broadband Internet in the U.S. 2021*



## 20% of Those not Currently Online at Home Paid to Subscribe to an Internet Service at Home in the Past Year, While 54% Have Never Subscribed

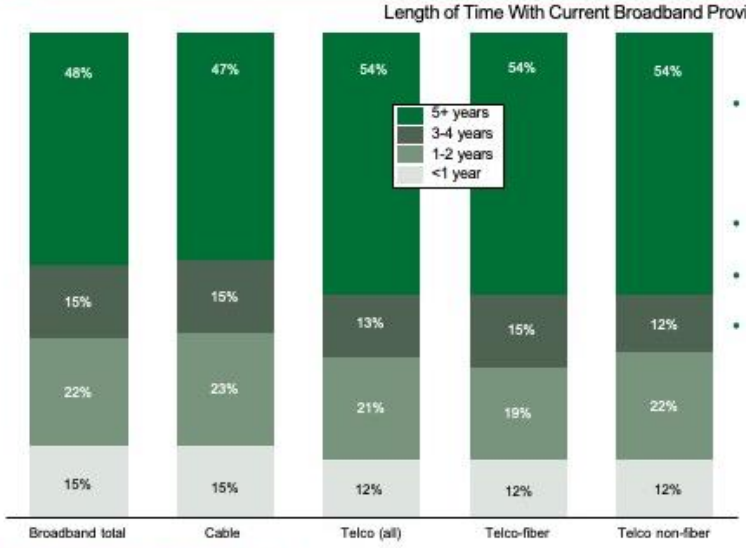



- 2.6% of all households paid to subscribe to an Internet service at home in the past year, but currently do not – compared to 3.2% in 2016
  - 18% of households that do not get an Internet service at home plan to subscribe in the next six months
- <u>68% of those that do not use a laptop or desktop computer are not online at home – accounting for 67% of all not online at home</u>
  - 42% that do not get an Internet service at home (and are not planning to subscribe) cite a lack of need as the main reason for not getting an Internet service at home, 19% cite the cost/expense, 12% cite availability issues, and 3% cite having access to the Internet via a mobile phone

*Have you paid to subscribe to an Internet service at home in the past year? Have you ever paid to subscribe an Internet service at home?*

From LRG study *Broadband Internet in the U.S. 2021*

## 15% of Broadband Subscribers Have Been With Their Provider for Less Than a Year, and 48% for 5+ Years

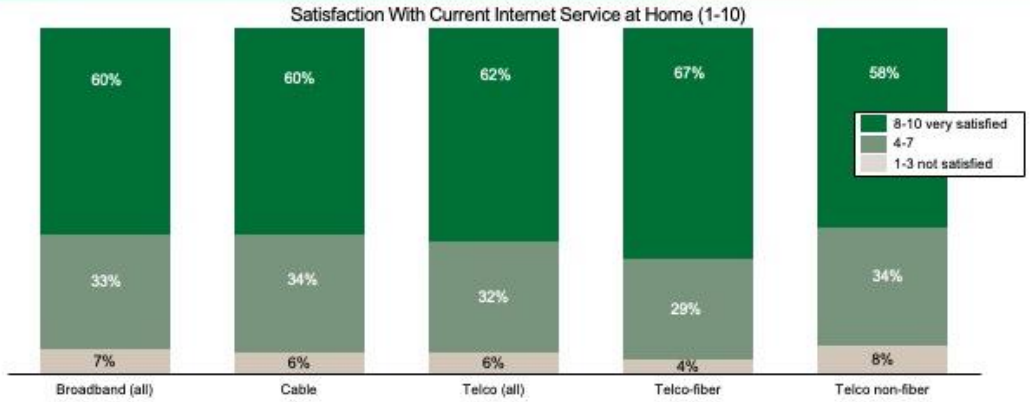



- 15% of cable broadband subscribers have been with their provider for <1 year – compared to 12% of Telco broadband subs
  - 72% of first-year broadband subscribers with a cable or Telco broadband service get cable
- 52% of first-year broadband subscribers are ages 18-34
- Movers account for 49% of those that have had their broadband provider for <1 year
- 21% of first-year broadband subscribers had no prior Internet service at home
  - First-year broadband subscribers that had no prior Internet service at home account for 3% of all broadband households

From LRG study *Broadband Internet in the U.S. 2021*



## Overall, 60% are Very Satisfied With Their Broadband Service at Home, While 7% are not Satisfied

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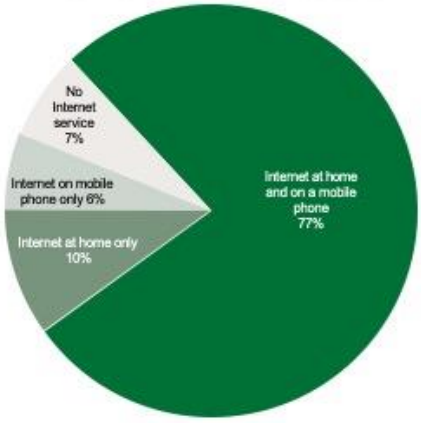
Distribution of Home Internet and Mobile Phone Internet Households

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- Among those that only get Internet service on a smartphone:
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  - The mean age is 45.8 – similar to 45.5 overall
  - Account for 10% of all renters – compared to 5% of home owners
- 10% of households only get Internet service at home – compared to 17% in 2016
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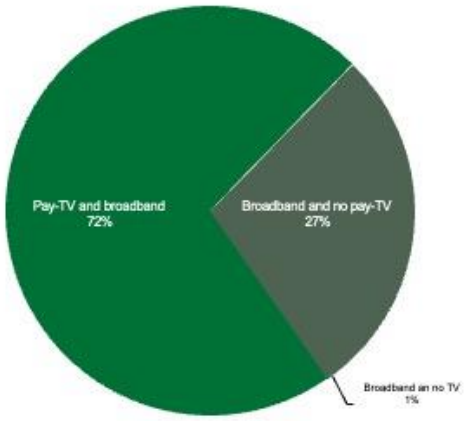
From LRG study *Broadband Internet in the U.S. 2021*



## 72% of Broadband Households Also get a Pay-TV Service

Distribution of Pay-TV in Broadband Households

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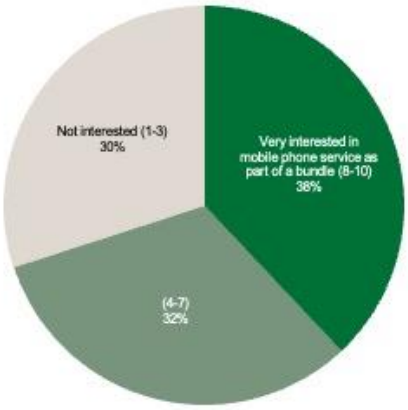
- 28% of broadband households do not get a pay-TV service (including about 1.5% that do not use a TV)
  - In 2016, about 16% of broadband households did not get a pay TV service
- The mean age of adults with broadband and no pay-TV service is 40.8 – compared to 45.8 among those with broadband and pay-TV
  - 40% with broadband and no pay-TV are ages 18-34 – compared to 26% with broadband and pay-TV
  - Broadband and no pay-TV households have a mean annual income 14% below those with broadband and pay-TV

From LRG study *Broadband Internet in the U.S. 2021*

## 38% With Internet at Home are Very Interested in Getting Mobile Phone Service as Part of a Bundle, While 30% are not Interested

Interest in Mobile Phone Service as Part of a Bundle
Internet at Home




- 43% with broadband and a pay-TV service are very interested in getting mobile phone service as part of a bundle – compared to 25% with broadband and no pay-TV service
- 46% that currently get a bundle are very interested in getting mobile phone service as part of a bundle – compared to 32% that do not get a bundle

*Using a 1-10 scale with 10 being extremely interested and 1 being not at all interested…Regardless of the price, and whether or not you currently use these services, how interested would you be in the following… Getting wireless mobile phone service as part of a bundle with other services – like Internet and TV*

* Results above do not include those not online at home. Of those not online at home, 8% are very interested, and 70% are not interested.

From LRG study *Broadband Internet in the U.S. 2021*



LRG

# The State of Broadband Competition

## For CTAM

# Call Notes: September 1, 2022
# Subject: CTAM Competition + Retention Working Group Call

## Welcome/Roll Call

Armstrong – Nolan Bennetti
Cable One – Jim Obermeyer, David Ballew
Charter – Zoe Santo, Jennifer Ingram, Joe Carillo, Daniel Pastore, Darcy Foreman
Comcast – Sarah New
Cox – Krista Ercoli, Caroline Counter, Jaime Buckley, Tony Maldonado, Wendy Rosen, Zack Fields, Betty Jo Roberts, Anthony DeFilippo
MCTV – Katherine Gessner, Elizabeth Kwolek
Mediacom – Dianne Schanne, Eric Schoenfeldt, David McNaughton, Alyssa Hurley, Chrissy Bryant
Sparklight – Varn Chavez
CTAM – Mark Snow, Deepa Venkataraman, Vicki Lins, Ken Leonardo, Zell Murphy + Renee Harris

## IEN Presentation

Sean Ryan, Vice President, Digital Strategy, I.E. Networks presented the attached CTAM Audience Intelligence for Broadband + Mobile.

Highlights include:

### Broadband

- The goal of the audience intelligence research was to update the value perceptions of and satisfaction with home broadband internet services.
- After finding substantial shifts in consumer behavior in 2020 due to covid, and continued shifts in the following year – we want to understand how the conversation has changed in 2022:
    - Is broadband still viewed as a necessity in the same way it was in 2021?
    - What impact has the back-to-work movement had on the value perception?
    - How has the vernacular changed?
    - What economic factors are driving conversation?
        - The answers are: Social factors, Economic factors and shifts in conversation and verbiage.
- **Social Factors:**
    - In 2021, we found an increase in consumer's need for reliable, high-speed internet across multiple devices at the same time.
    - Work-from-home, virtual learning and increased home-assistance technology changed dramatically from 2018 to 2021.
    - Do we see that changing? In short: No.
- **Economic Factors**
    - Terms like "afford" or "cost" were up 50% and 22% respectively last spring – indicating more conversation about discretionary spending
- **What's Being Said**
    - The vernacular
        - Cable vs Fiber vs "Broadband"
            - 5G is on the rise, while fiber dips
            - National programs like ACP, T-Mobile 5G spark engagement
            - Fiber Conversation: Focused on Rollout
            - Cable Conversation: Not Much "New" News
            - Broadband Conversation: Legislation Drives Interest

- Broadband Conversation: Legislation Drives Interest

- The Tech Media and Influencer universe is talking about 5G Fixed Home Internet – and the consumer conversation is following
- There isn't much "new" news for cable… as it's not the shiny new object
- **Sentiment Highlights**
    - In the last 30 days Cable has a more negative sentiment than Fiber and 5G
    - However, in terms of latency there is a lot of conversation around 5G. In looking at market share, the discussion of latency in 5G is very high. The sentiment is negative when discussing latency specifically.
- Cable Broadband still provides a perceived necessity for consumers.
    - 1. Those maintaining pandemic behaviors like working remotely
    - 2. Those with an increased number of household devices that are connected – and need to be connected at all times – need reliability
- **Potential Challenges**
    - Cable broadband will face potential challenges as consumers face a recession and dip in the housing market:
        - 1. Consumers reevaluating services as a cost-savings measure (e.g. Looking at new ISP while reducing number of streaming services) – potential "jump-ball" situation
        - 2. The slowdown in new construction could continue, meaning fewer opportunities for broadband growth in these households
        - 3. Consumers trying 5G Home Internet as a cheaper alternative to cable as it's being pushed by mobile providers
- What we know:
    - More than ever, consumers are expressing the need for reliable service that can handle both hybrid work needs and the growing number of connected devices in their home
    - These consumers are also being enticed by lower cost options – which, on their face, appear to be comparable solutions to cable internet
    - Despite promises from Fixed Wireless Home Internet providers – cable provides the best 1-2 punch when combining internet and mobile in cost and reliable connectivity

## Mobile

- The mobile audience intelligence goal is to chart the landscape of digital conversation among potential mobile customers and the messaging that surrounds them – what's connecting, what isn't, and why?
- Best Case Scenario
    - Mobile consumers looking for a new carrier see the value in cable's mobile offering – in price, reliability, and overall connectivity - and choose to leverage cable as one source for their content and connectivity needs
- Alternatively…
    - As consumers search for new internet service, they will likely be exposed to cable's mobile offering see an opportunity to save money and simplify their services – and move to change both internet AND cellular service to cable as the one source in the process
- However…
    - Consumers are unable to consider just mobile from a cable provider – so it's important to position mobile and cable internet as a 1-2 punch to best service the consumer's needs
- The Key questions:
    - How are people talking about mobile – and specifically mobile from their cable internet provider?
    - What are the pivot-points for making a change?
    - What factors are driving their decisions?
- A 2022 study (via Statista) shows that 29% of consumers are likely or very likely to consider switching their mobile provider within the year
- Consideration Factors are:

    - Cost, Cost, Cist
    - Performance & Reliability
    - Consumer Trust (Customer service, specifically)
- Awareness – What are consumers seeing?
    - The cable mobile service is still being bucketed as a "smaller provider" – and even lumped below providers like Mint, GoogleFi and Visible in publications like this CNET piece (July '22)
    - Top 10 organic search results for "Mobile Plans" list ZERO cable offerings - and 2 review sites where consumers are researching.
    - Consumers aren't talking about – and aren't aware or have little knowledge about cable's mobile offering
    - Meanwhile, the 5G Fixed Home story is picking up traction – and getting eyeballs
- **The Experience – A Consumer's Journey**
    - What are consumers seeing when they start their search?
        - The best we saw cable mobile service perform in organic search is 7th (behind legacy cellular and review sites)
        - Nearly all the ads being run are for legacy cellular companies (Verizon, AT&T, T-Mobile) and newer low-cost or pre-paid plans (Mint, Visible, etc.)
        - And the cell companies are going after cable internet… hard.
        - For example: T-Mobile is using PAID SEARCH on the keywords "Best Cell Phone Plan" … to sell fixed home internet
- Mobile providers are selling price for their internet offering – but not paying off the service.
- Cable broadband providers sell price plus the best of both internet and mobile offerings, but the story is difficult for consumers to find.

### What's Next?

- What we know:
    - **We Know: Consumers want competitively priced, dependable connectivity.**
    - Research shows that price and reliability are key to the decision. It's not one or the other. It's both.
    - **We Know: A broadband + mobile offering from a single source is a "1-2 punch" opportunity.**
    - Research shows consumers say broadband wins on speed and reliability, but awareness of mobile service from the same company is low.
    - **We Know: Consumers are doing their own online research vs. "asking friends," and mobile service from cable broadband brands are not showing up.**
    - Research shows that the competition, including other MVNOs, is framing the discussion across trusted consumer information touchpoints
- **Indicated Actions**
    - **Cable broadband companies are not showing up in conversations about new mobile options.**
    - **The competition is exploiting this vacuum.**
    - Broadband plus mobile is a powerful story, but it's not being told. The SmartMove and Industry Positioning marketing communications opportunities will raise awareness, educate, and influence adoption of mobile/5G service and increase conversation.
    - **As an MVNO, the value of the Verizon or T-Mobile technology backbone cannot be directly expressed by brand. However, when that information is made obvious, consumers respond positively.**
    - We can "influence influencers" by informing them about both the backbone and superior service from cable broadband companies. Subsequently, we can feature knowledgeable influencers on CTAM's marketing platforms.
    - **Consumers are exposed to aggressive campaigns from legacy cell providers now selling Internet services.**
    - This is a critical moment. The cable mobile providers need to enter the battle and lead the conversation:

- Consumers can get broadband and mobile reliability and cost savings, together – in a single offering.

- **Educate, Message, Measure:**
  - **Educate.** We believe that understanding the unique value proposition will effectively connect the dots for consumers and create a logical purchase choice. We recommend an educational campaign that engages third-party influencers to 'leak the secret.'
  - In lock step, we recommend new website video content and ads featuring an influencer helping consumers make informed choices in broadband and mobile.
  - **Message.** Relying on what we've learned through the AI and additional CTAM research, we can build a resonant story about the value a single source connection, based on easily understood technical and economic proof.
  - **Measure.** We recommend on-going quant snapshots and regular sentiment tracking, as well as website data, to assess levels of engagement, messaging effectiveness and echo effect.

<u>Questions from the group</u>

1. *With regards to slides 27 + 28, do the size of the pie charts have any significance on the page?*

   **Answer:** The size of the pie chart indicates overall volume of conversation.

2. *When looking at the category of cable from a sentiment, is this broadband only?*

   **Answer:** This sentiment portion is for broadband only. However, there is certainly some grandfathered sentiments from consumers from past experience with TV or video, but IEN analyzed terminology specific to internet.

3. *When seeing negative comments on 5G – are the negative comments assumed to be about 5G or negative comments in relations to discussing 5G and possibly could be about cable and how they hope that latency is better with 5G?*

   **Answer:** In looking at tens of thousands of comments there could be a little crossover but generally the pool that IEN analyzed was discussing 5G Fixed Home Internet and relevant to latency conversation of that product.

4. *On the negative percentage of 5G for latency on slide 28, is that mostly focused on reliability and latency? Or is there price concern included?*

   **Answer:** This particular slide is only about latency. Price is a positive factor for 5G.

5. *When we see negative comments under the 5G header, should we assume it is in reference to 5G (and not a negative comment about say cable in the context of switching to 5G)?*

   **Answer:** You should consider it a negative comment about 5G itself.

6. *Do we know which group of consumers are enticed by 5G?*

   **Answer:** CTAM will look at that with the quant work with HarrisX - we'll get enough scale (hopefully) to see that. If any of the researchers on the call have a bead on that, please weigh in.

   Cox believes there are 3 core potential targets: 1. younger/tech-savvy attracted to innovative option for lower price, 2. feel stuck and eager for new options for less friction-filled experience 3. price conscious willing to trade off for 'good enough speed' at lower price.

7. *Is the negative consumer sentiment associated with mobile switching directed at the provider the consumer is moving away from or the process in general?*

   **IEN Answer:** it is primarily the provider - frustrations with their current plan (cost, lack of service/coverage, etc.). Minimal discussion about the process - since they have many brands courting them with enticing offers.

8. *Is this just verifying their decision to switch (aka honeymoon period)? That MSO's are rated higher than mobile carrier's, given that MSOs are running on the same networks.*

   **IEN Answer:** while we assume there may be some honeymoon period for the cable mobile companies – the customer satisfaction score is inclusive of customer service, ease of use, connectivity, etc. – so there are some differentiating factors that could/should outlast a honeymoon period (cost, single bill, etc.).

**Positioning vs. 5G**

In separating fact from fiction and the noise from the reality, how do we get into the conversation of setting the record straight on what 5G Home Internet really is -- homing in on the fact that 5G is a 50-meg best effort service for $50 while (we think) mobile bits are prioritized ahead of home internet bits. How do we deposition 5G?

CTAM is prepared to create a website that would provide the hard facts about 5G vs Cable Broadband and be a little more aggressive than we often are as an industry. MSOs can then have more friendly de-positioning messages on their own sites and assets. If all MSOs participated along with CTAM website, then this will begin to fill up the consumer search space for 5G.

Charter agrees with CTAM and stated that the IEN presentation further supports the need to have the other side of the story shared. More can be done to deposition 5G if all MSOs engage in their own way and in their own voice.

CTAM has created a development environment to begin to envision how a 5G Facts website will look and will share once a password protected version with the group once ready. This website will be funded by LeadShare and therefore no additional cost for MSOs.

Charter asked if other MSOs have efforts underway to combat 5G and would it make sense to create a working group to further discuss the effort?

- Cox agrees a working group would be beneficial to help clarify the concept and make sure all MSOs can engage across the board.

Mediacom likes the idea of the website and working group but noted that de-positioning 5G has an overlap for positioning 10G. So, is there a way to have these two initiatives work together?

<u>Question from the group</u>

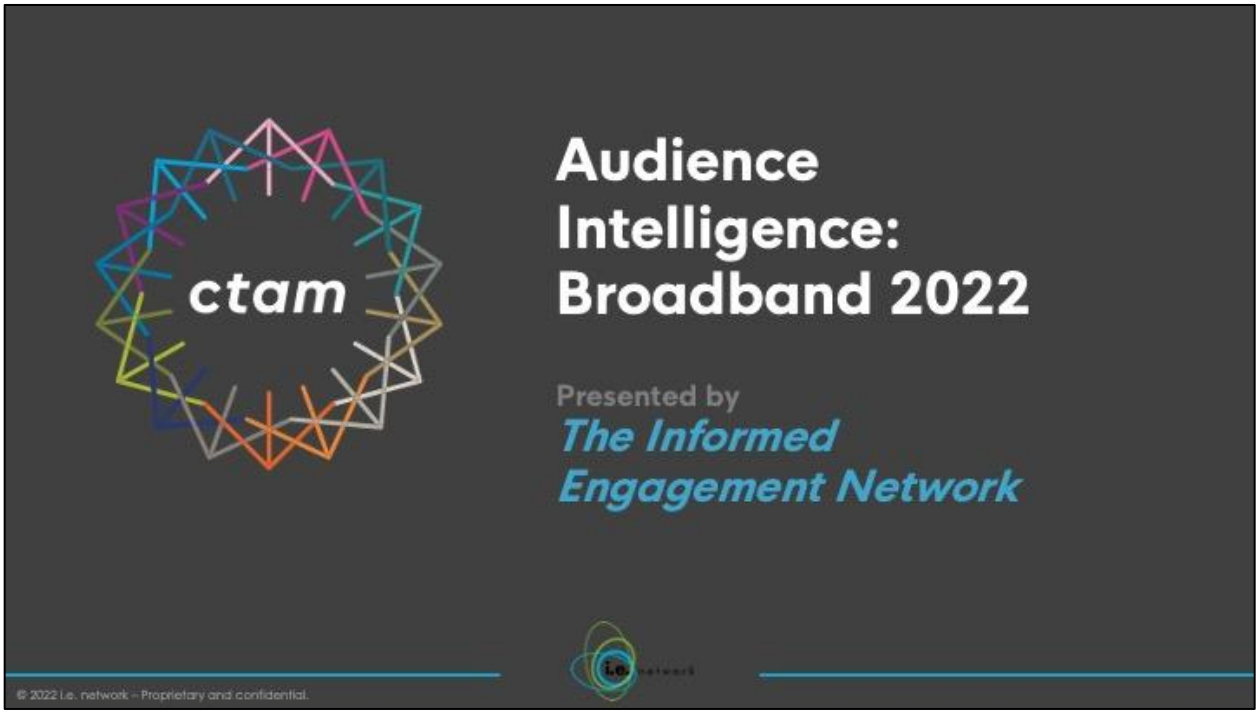
1. What Charter is referring to in creating a working group is to discuss is search engine optimization, social strategies, etc.?

   **Answer**: Correct.

**Actions/Next Steps**

- Attached please find New Street Media's brief that mentions the ceiling for 5G (please see slide 14).
- CTAM will poll the group for an ad hoc call to discuss the specific topic of 5G Internet Messaging Working Group.

Presentation: *IEN CTAM Broadband Mobile AI Report*




## The Key Questions:

After finding substantial shifts in consumer behavior in 2020 due to covid, and continued shifts in the following year – we want to understand how the conversation has changed in 2022:

- Is broadband still viewed as a necessity in the same way it was in 2021?
- What impact has the back-to-work movement had on the value perception?
- How has the vernacular changed?
- What economic factors are driving conversation?



## The Answers:

Social factors

Economic factors

Shifts in conversation and verbiage

## Driving The Changes



## Social Factors:

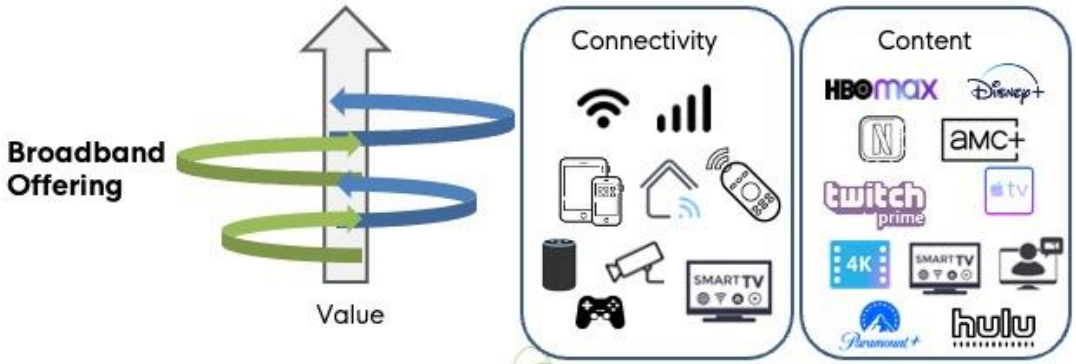
In 2021, we found an increase in consumer's need for reliable, high-speed internet across multiple devices at the same time.

Work-from-home, virtual learning and increased home-assistance technology changed dramatically from 2018 to 2021.

Do we see that changing? In short: No.

## A Quick Look Back… What We Found in 2021

*COVID accelerated a shift in the value equation, as connectivity and content are creating a 1 + 1 = 3 scenario.*






## Pipeline Needs Aren't Going Anywhere:


Parks Associates reports the average home in the US has 16 connected devices – that's up 23% from 2021

A Deloitte survey suggests US households have more than doubled "smart devices" in their home since 2019

…The need for bandwidth is only increasing

## Working Remotely Remains Critical:

There are estimates that nearly **3/4s of companies** will continue with at least a **hybrid model** – meaning consumers will still need reliable internet for work – even if it's not full time

Even 25% WFH = the need for 100% connectivity 100% of the time



## However...Options Are On The Rise:

Consumers have more access to Fiber, Fixed Home 5G, and cable broadband options


AT&T promises fiber-to-the-home expansion in 90 metro areas this year

## Economic Factors

New housing developments are the biggest opportunity for broadband subscription growth – but the market is slowing

BREAKING • INVESTING

Forbes

**Housing Market 'In Free Fall' As New Construction Plummets—Here's When 'Reset' Could Cool Prices**



## Economic Factors

Inflation has also impacted consumer spending, as many in the US are looking at cost-savings measures

Via a 2022 TUBI study – the average consumer plans to cut 3 of their 5 streaming services

ENTERTAINMENT

**Average consumer cutting 3 streaming services from their lineup in 2022**

MAY 5, 2022

## Economic Factors

Terms like "afford" or "cost" were up 50% and 22% respectively last spring – indicating more conversation about discretionary spending




## Consideration Factors - Summary

**Mover opportunities are slowing**

**Cost concern is growing**

**Reliability becomes more critical**

## What's Being Said

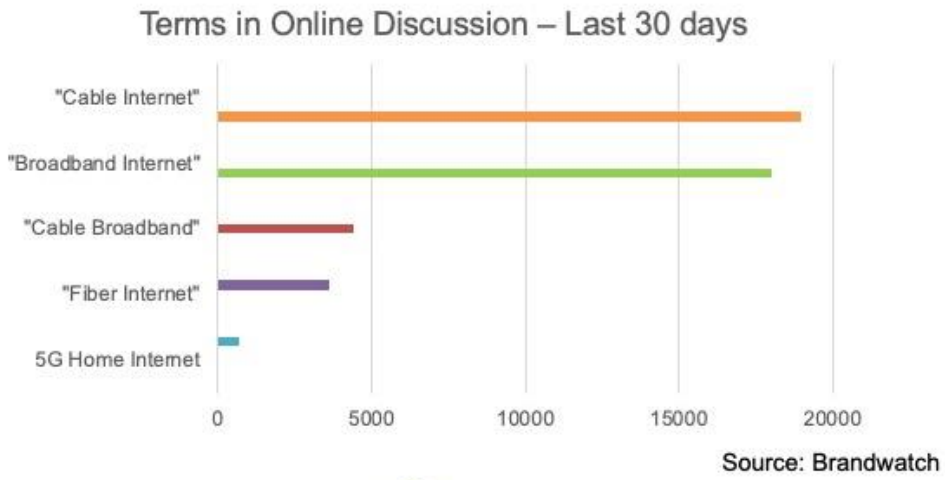


## The Vernacular

**Cable vs Fiber vs "Broadband"**

- Brandwatch Social Listening (100,000s of posts)
- Buzzsumo Article Shares/Buzz Analysis (10,000s of articles)

## The Vernacular

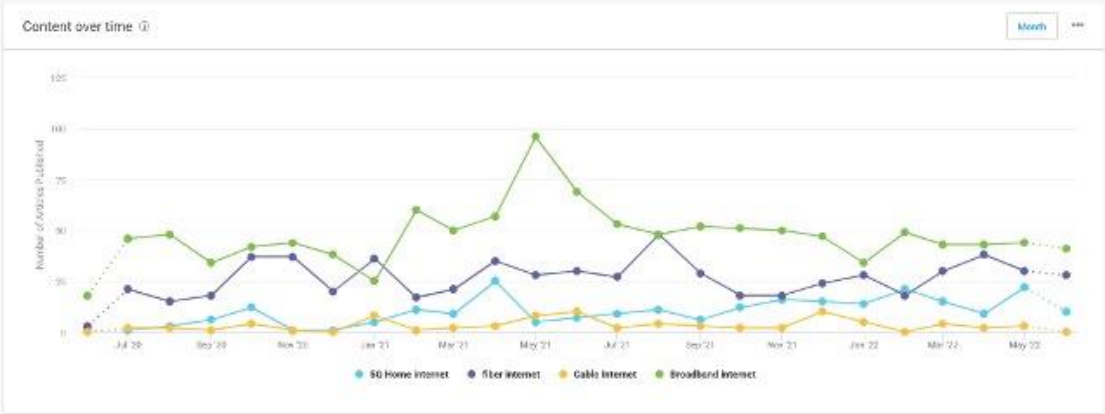



Source: Brandwatch



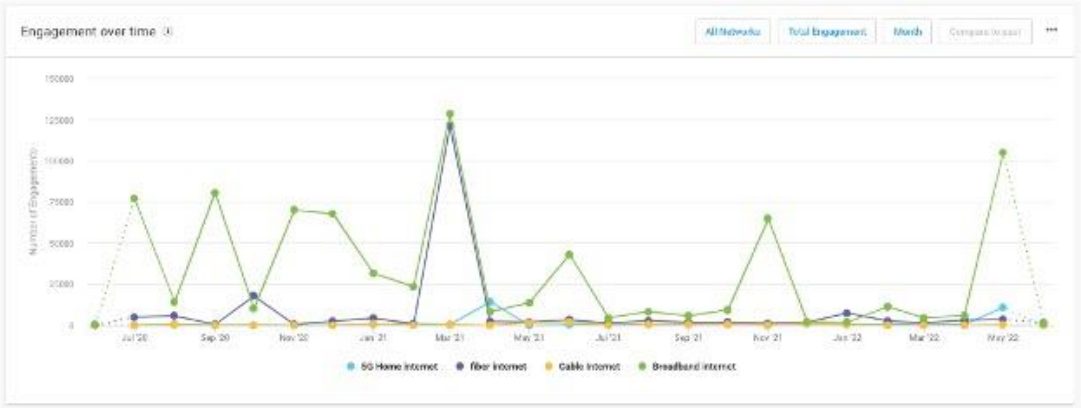
## Cable vs Fiber vs 5G Home

**5G is on the rise, while Fiber dips**



## Cable vs Fiber vs 5G Home

### National programs like ACP, T-Mobile 5G spark engagement






## Fiber Conversation: Focused on Rollout


### AT&T is rolling out multi-gig fiber internet to more than 70 cities

New plans will offer symmetrical 2Gbps or 5Gbps data speeds starting at $110 a month.

S. Rutherford | 01.24.22
@samrutherford

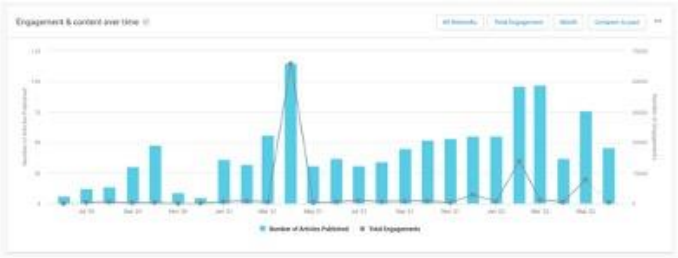
## Cable Conversation: Not Much "New" News





## Broadband Conversation: Legislation Drives Interest


## 5G Home Internet Conversation: The Interest is Growing

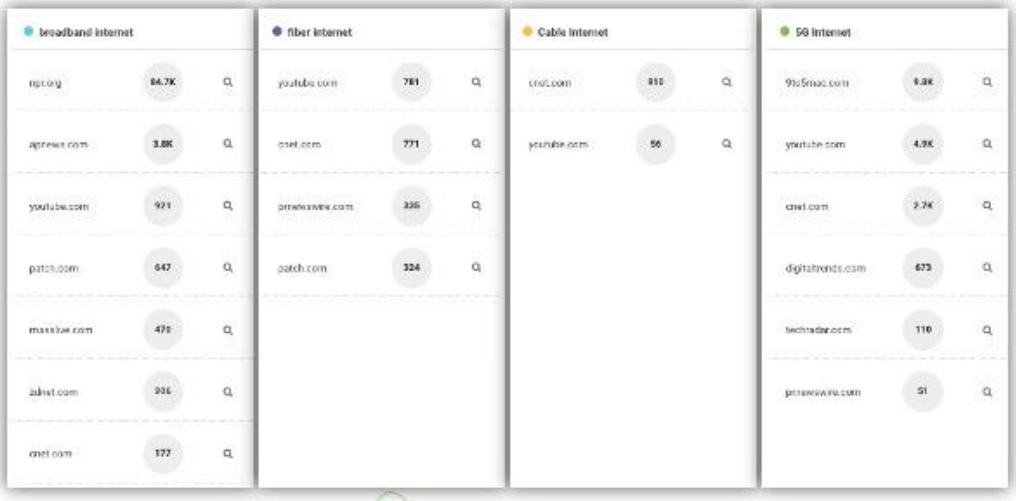






## Cable vs Fiber vs 5G Home

**Top sources of news**



## What's Being Said - Summary

**The Tech Media and Influencer universe is talking about 5G Fixed Home Internet – and the consumer conversation is following**

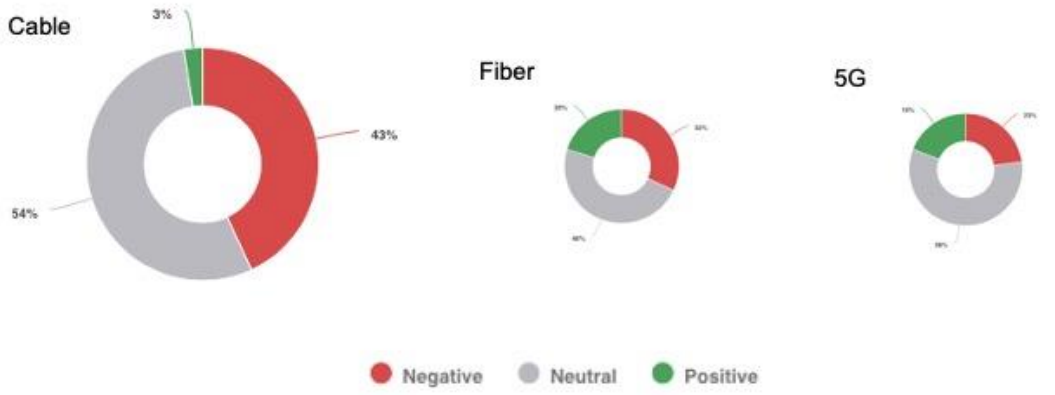
**There isn't much "new" news for cable… as it's not the shiny new object**



## Sentiment Highlights

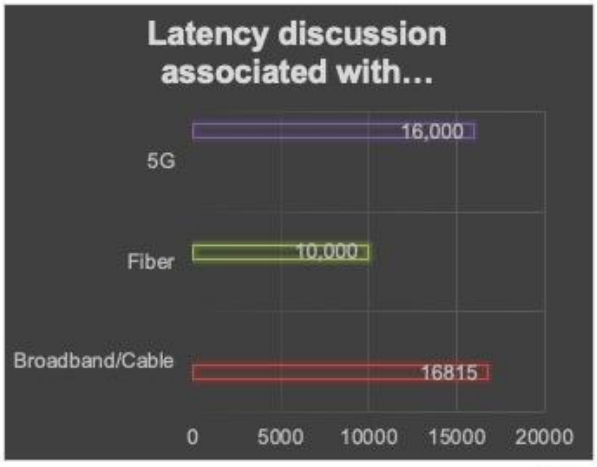
## Cable vs Fiber vs 5G Home

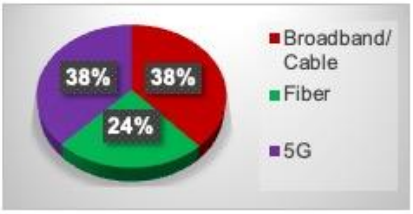
### Overall Sentiment – Last 30 days

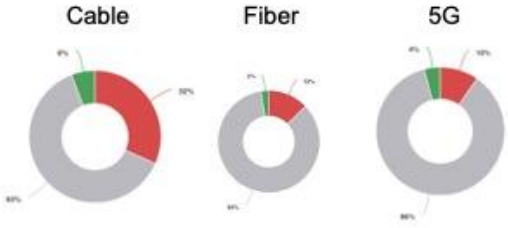





## Cable vs Fiber vs 5G Home

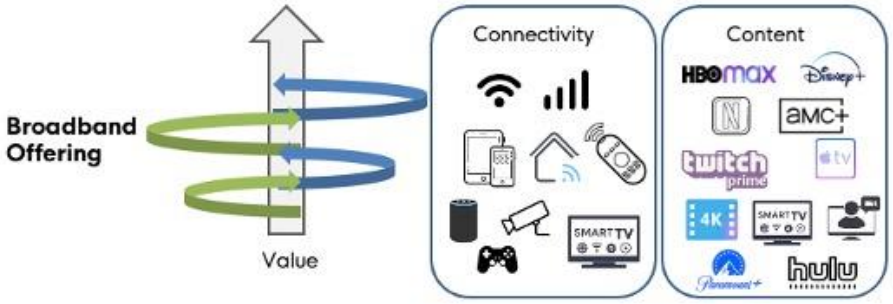



Source: Brandwatch

## Jumping Back Again To 2021…




***How can this value be maintained and sustained post-COVID?***



## Positive Trends

Cable Broadband still provides a perceived necessity for consumers.

1. Those maintaining pandemic behaviors like working remotely

2. Those with an increased number of household devices that are connected – and need to be connected at all times – need reliability

## Potential Challenges

Cable broadband will face potential challenges as consumers face a recession and dip in the housing market:

1. Consumers reevaluating services as a cost-savings measure (e.g. Looking at new ISP while reducing number of streaming services) – potential "jump-ball" situation

2. The slowdown in new construction could continue, meaning fewer opportunies for broadband growth in these households

3. Consumers trying 5G Home Internet as a cheaper alternative to cable as it's being pushed by mobile providers



## What we know

1. More than ever, consumers are expressing the need for reliable service that can handle both hybrid work needs and the growing number of connected devices in their home

2. These consumer are also being enticed by lower cost options – which, on their face, appear to be comparable solutions to cable internet

3. Despite promises from Fixed Wireless Home Internet providers – cable provides the best 1-2 punch when combining internet and mobile in cost and reliable connectivity

*So, let's look at mobile...*


ctam
Audience Intelligence: Mobile 2022
Presented by
The Informed Engagement Network
© 2022 i.e. network – Proprietary and confidential.


N
Our Audience Intelligence Goal:
Chart the landscape of digital conversation among potential mobile customers and the messaging that surrounds them – what's connecting, what isn't, and why?
© 2022 i.e. network – Proprietary and confidential.

## Best Case Scenario:

Mobile consumers looking for a new carrier see the value in cable's mobile offering – in price, reliability, and overall connectivity - and choose to leverage cable as one source for their content and connectivity needs



## Alternatively...

As consumers search for new internet service, they will likely be exposed to cable's mobile offering see an opportunity to save money and simplify their services – and move to change both internet AND cellular service to cable as the one source in the process

## However...

Consumers are unable to consider just mobile from a cable provider – so it's important to position mobile and cable internet as a 1-2 punch to best service the consumer's needs



## *How do we get there?*

| Consideration Factors | Awareness | Experience |
|---|---|---|
| *What is driving the consumer to switch?* | *What options are consumers being exposed to?* | What are consumers finding as they navigate their options? |

## The Key Questions:

- How are people talking about mobile – and specifically mobile from their cable internet provider?
- What are the pivot-points for making a change?
- What factors are driving their decisions?

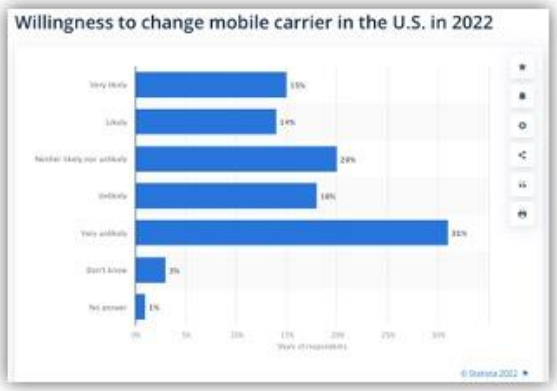


## Consideration Factors:
The Consumer Mindset

## Consideration Factors

**Making the switch:**

A 2022 study (via Statista) shows that 29% of consumers are likely or very likely to to consider switching their mobile provider within the year






## Consideration Factors

- ✓ Cost, Cost, Cost
- ✓ Performance & Reliability
- ✓ Consumer Trust *(Customer service, specifically)*

# Consideration Factors

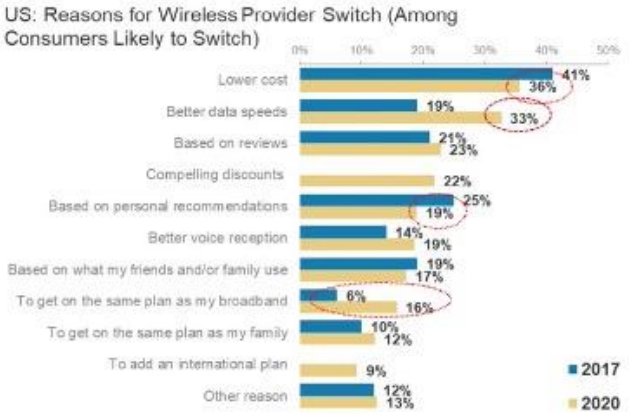
## Making a switch

What's driving the switch?

Lower cost drops, but still leads... but speed jumps – as does the desire to add to their broadband plan

Oddly – the biggest drop-off? Personal recommendations

Our current data analysis backs this up





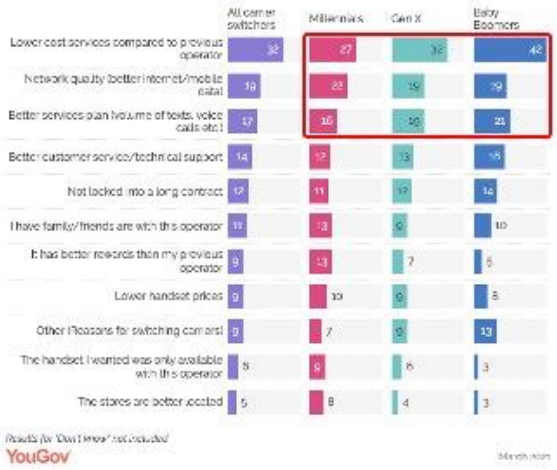

# Consideration Factors

## Making a switch

Breaking down by age...

Cost is #1 for everyone, but more so with boomers.

Millennials are slightly more interest in QUALITY and REWARDS than others

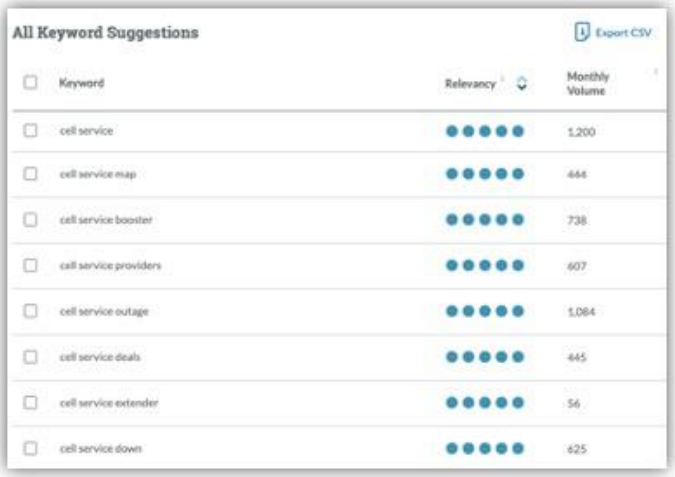


## Consideration Factors

When users search for solutions to cell/mobile service, they want to know about things like:

- Coverage
- Signal
- Outages
- Deals

These all point to performance, reliability and cost

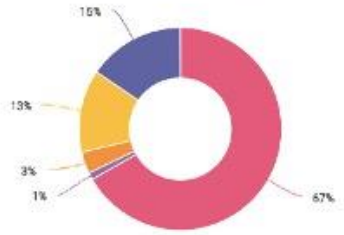


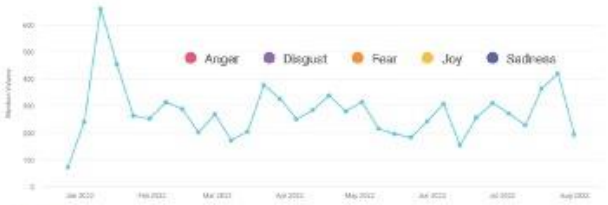



## Consideration Factors: Talking About a Switch

**Trending Conversation on Switching:**

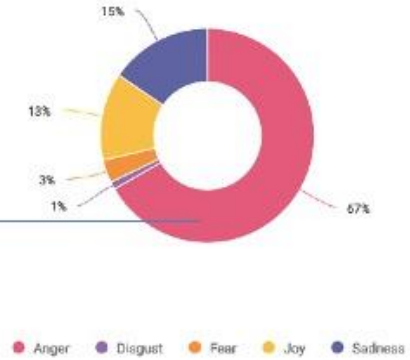
- Upset about reliability
- Price (Affordability, no contract)
- New/Upgraded Device



# Consideration Factors: Talking About a Switch

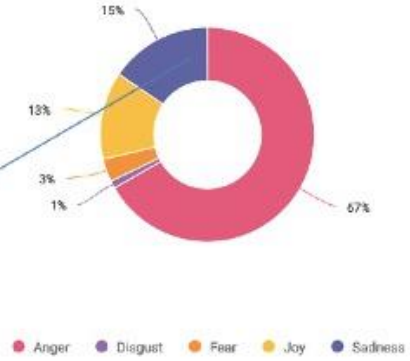
**Reliability:**



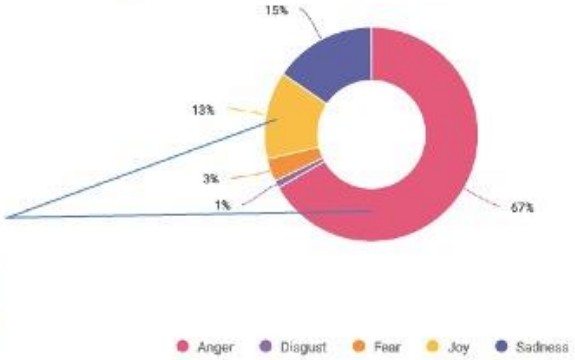

# Consideration Factors: Talking About a Switch

**Price:**

# Consideration Factors: Talking About a Switch

**Device:**

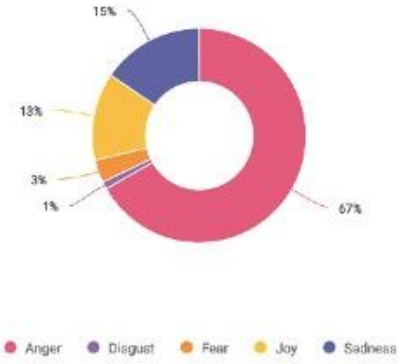






# Consideration Factors

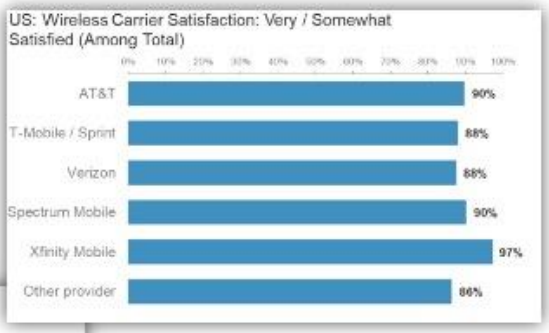
**Cable Pays Off On These Factors**

- *Reliability*
- *Price*
- *Device Management*



## Consideration Factors

And there is proof:
As of late last year… the cable providers were *outperforming* the mobile providers in overall satisfaction





Source: Morgan Stanley Oct '21



## Consideration Factors - Summary

**Consumers are seeing and discussing more options than ever – and have more choice without contracts**

**Cable has a strong story to tell these consumers in the consideration phase of switching**

## Awareness:
What are consumers seeing



## Awareness

Awareness: Volume of conversation related to each company's mobile offering over the past year...


...pale in comparison to the major players in *just the last month*

Total Mentions
89K

verizon
Total Mentions
46K

## Awareness

The cable mobile service is still being bucketed as a "smaller provider" – and even lumped below providers like Mint, GoogleFi and Visible in publications like this CNET piece (July '22)

It's relegated as alternative, with snarky "if you believe in bundles" language in Tom's Guide (Aug '22) – list #10 of 10




## Awareness

Top 10 organic search results for "Mobile Plans" list ZERO cable offerings - and 2 review sites where consumers are researching.

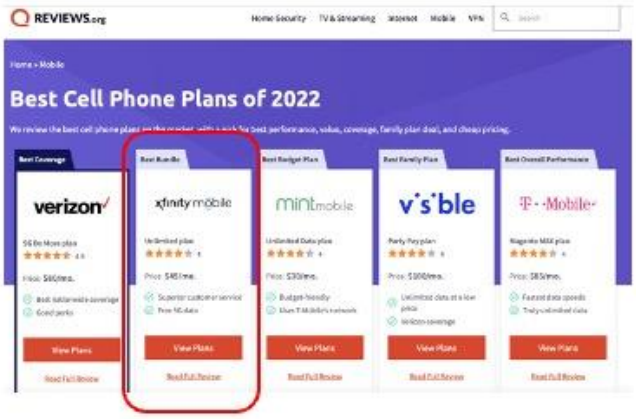
Red = Cell Companies
Blue = Review Sites

https://www.t-mobile.com/cell-phone-plans
https://www.usnews.com/360-reviews/services/cell-phone-plans
https://www.att.com/plans/wireless/
https://www.verizon.com/plans/
https://fi.google.com/about/plans/
https://www.simplemobile.com/
https://www.cricketwireless.com/cell-phone-plans
https://clark.com/cell-phones/best-cell-phone-plans-deals/
https://www.reviews.org/mobile/best-cell-phone-plans/
https://www.straighttalk.com/

## Awareness

One review site called out Xfinity Mobile as a "best bundle" option – and listed "superior customer service" as a selling point

But the consumer needs to dig to find these stories






## Awareness - Summary

**Consumers aren't talking about – and aren't aware or have little knowledge about cable's mobile offering**

**Meanwhile, the 5G Fixed Home story is picking up traction – and getting eyeballs**

## The Experience:
## A Consumer's Journey

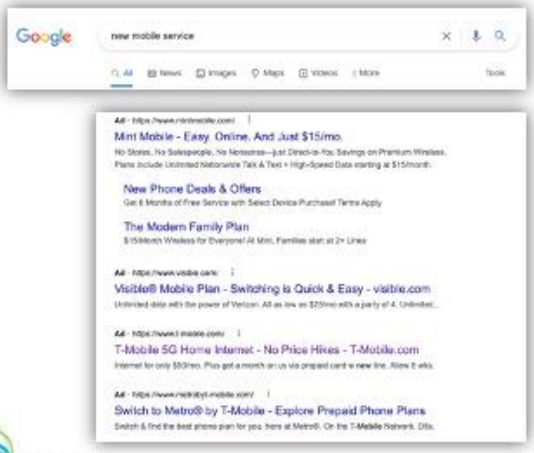


## Experience

What is the consumer seeing when they start their search?

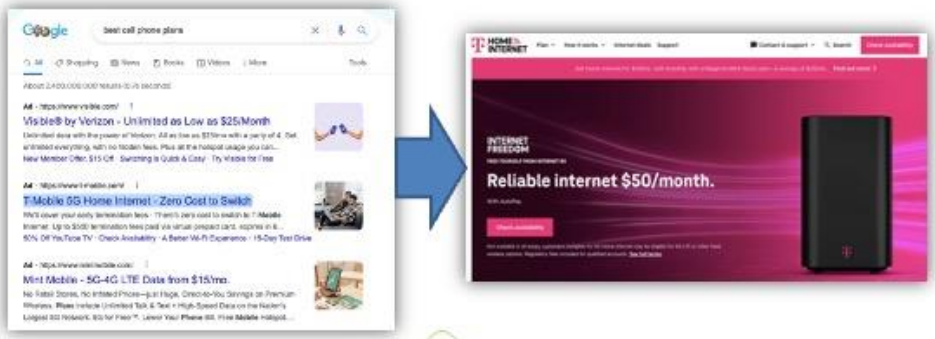
The best we saw cable mobile service perform in organic search is 7th (behind legacy cellular and review sites)

Nearly all the ads being run are for legacy cellular companies (Verizon, AT&T, T-Mobile) and newer low-cost or pre-paid plans (Mint, Visible, etc.)



# Experience

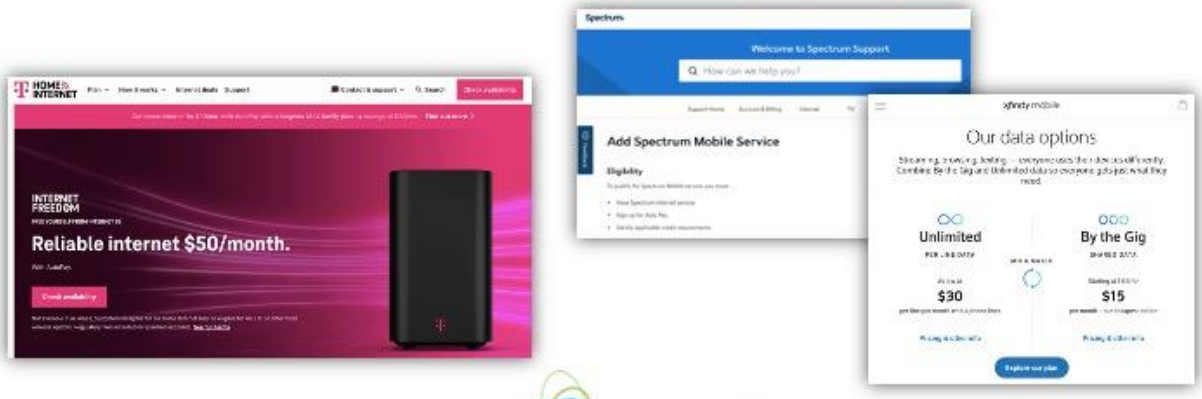
And the cell companies are going after cable internet... hard.
For example: T-Mobile is using PAID SEARCH on the keywords "Best Cell Phone Plan"... to sell *fixed home internet*






# Experience

Compare the T-Mobile experience to sell add-on service in internet, to some of the cable companies add-on mobile offerings...



## Experience

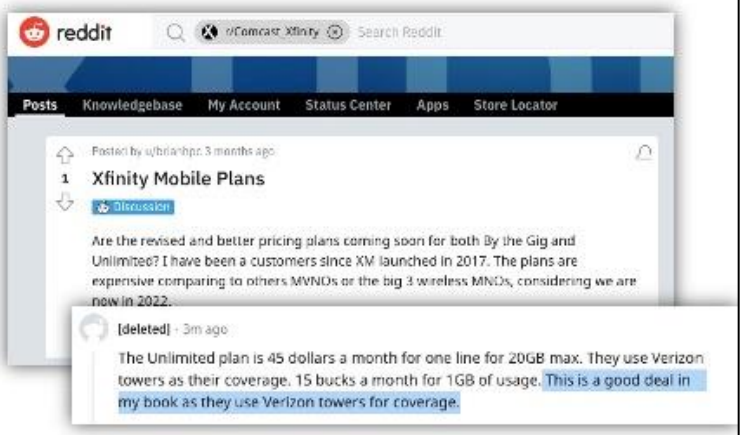
Xfinity does the best job of streamlining the decision here.
Simple. Clear. Concise. However, the consumer has reliability questions.





## Experience

We see consumers who feel more **confidence** in mobile through a cable provider *once they see it is going to be as reliable as any of the other major mobile providers* (e.g. Verizon)



## And The Proof Will Be In the Performance…

Broadband Mobile vs Mobile 5G


CNET Your guide to a better future

I Tried Out Verizon and T-Mobile's 5G Home Internet to See if I Could Truly Ditch Cable

T-Mobile and Verizon's 5G home internet options could become a compelling value, but it's still early days.

Through several weeks of my trying out T-Mobile's and Verizon's respective $50-per-month services, both showed plenty of promise for eventually replacing my home broadband. But neither proved reliable enough to keep today, so for now, I'm switching back to a more focused home internet provider.

https://www.cnet.com/home/internet/i-tried-out-verizon-t-mobiles-5g-home-internet-to-see-if-i-could-truly-ditch-cable/



## Experience - Summary

**Mobile providers are selling price for their internet offering – but not paying off the service.**

**Cable broadband providers sell price plus the best of both internet and mobile offerings, but the story is difficult for consumers to find.**

## What's Next?



## What We Know

**We Know: Consumers want competitively priced, dependable connectivity.**

Research shows that price and reliability are key to the decision. It's not one or the other. It's both.

**We Know: A broadband + mobile offering from a single source is a "1-2 punch"opportunity.**

Research shows consumers say broadband wins on speed and reliability, but awareness of mobile service from the same company is low.

**We Know: Consumers are doing their own online research vs. "asking friends," and mobile service from cable broadband brands are not showing up.**

Research shows that the competition, including other MVNOs, is framing the discussion across trusted consumer information touchpoints.

# Indicated Actions

**Cable broadband companies are not showing up in conversations about new mobile options. The competition is exploiting this vacuum.**

Broadband plus mobile is a powerful story, but it's not being told. The SmartMove and Industry Positioning marketing communications opportunities will raise awareness, educate and influence adoption of mobile/5G service and increase conversation.

**As an MVNO, the value of the Verizon or T-Mobile technology backbone cannot be directly expressed by brand. However, when that information is made obvious, consumers respond positively.**

We can "influence influencers" by informing them about both the backbone and superior service from cable broadband companies. Subsequently, we can feature knowledgeable influencers on CTAM's marketing platforms.

**Consumers are exposed to aggressive campaigns from legacy cell providers now selling Internet services.**

This is a critical moment. The cable mobile providers need to enter the battle and lead the conversation: Consumers can get broadband and mobile reliability and cost savings, together – in a single offering.



# Educate, Message, Measure

**Educate.** We believe that understanding the unique value proposition will effectively connect the dots for consumers and create a logical purchase choice. We recommend an educational campaign that engages third-party influencers to 'leak the secret.'

In lock step, we recommend new website video content and ads featuring an influencer helping consumers make informed choices in broadband and mobile.

**Message.** Relying on what we've learned through the AI and additional CTAM research, we can build a resonant story about the value a single source connection, based on easily understood technical and economic proof.

**Measure.** We recommend on-going quant snapshots and regular sentiment tracking, as well as website data, to assess levels of engagement, messaging effectiveness and echo effect.

# Call Notes: September 29, 2022
# Subject: CTAM Competition + Retention Working Group Call

## Welcome/Roll Call

Call Attendees:

Altice – Scott Meador
Armstrong – Peter Grewar
Cable One – David Ballew
Charter – David Gray
Cox –Tony Maldonado, Anthony DeFilippo. Kristine Faulkner
Mediacom – Dianne Schanne, Eric Schoenfeldt
Sparklight – Varn Chavez
CTAM – Mark Snow, Sloane Stegen, Jes Johnson + Renee Harris

## Review of 5G Messaging Group call and progress

CTAM has secured a domain for 5G awareness: factsabout5G.com and shared a preview of the site which will go live on September 30. The site was created to help occupy space in the 5G Home Internet organic search results with the facts/truth about what 5G Home Internet is and is not – so we can intervene with consumers who are casually searching for 5G Home Internet. For this to be truly effective, MSOs will also need to lean in with their own "facts" pages. Charter and Comcast have both created pages.

There is a separate sub-group of this larger working group (the CTAM 5G Home Internet Messaging Working Group) that has reviewed this site and added comments and suggestions. If anyone has any additional updates or comments, please use the link below to add your edits:

https://docs.google.com/document/d/11I1rrnJDhijoeLfnFUmmJAr0Wlfi-y7OeoSObVSscg4/edit?usp=sharing

Separately, Comcast has created a spot that combats 5G in a humorous way which can be viewed here: https://www.ispot.tv/ad/2dpH/comcast-xfinity-weve-become-nocturnal. This spot is also included on the factsabout5g website.

## Review of New Street Research's new primary research work on consumer Broadband

CTAM provided an overview of the attached New Street Research's (NSR) deck "NSR Broadband Market Share Drivers" which analyzes the causes of the fall of cable net adds.

Highlights include:

- Interestingly, NSR's conclusion for the fall of cable adds is that it is mostly due to fixed Wireless Broadband
- Fiber and Moving are also factors in the decline
- Consumers say speed drives their purchasing decisions, but a surprising number of consumers don't know what speed they have and a surprising number of those who think they know, don't know
- Most consumers are satisfied with the speed they have today
- Speed may not be all it is cracked up to be
- Purchasing drives vary by provider type – households may be choosing Fixed Wireless because they believe it is a better product rather than cost alone. However, CTAM feels there is a market misperception but also could do better than DSL for some customers.

Please note, New Street Research is holding a call, Fri. September 20,2022 that will address broadband market share drivers. Please click here to view the presentation: https://www.newstreetresearch.com/download-page/replay-broadband-market-share-drivers-series-purchasing-and-churn-decision-drivers/ You will be required to enter your email to authenticate.

Group Discussion:

Altice noted that Craig Moffett held a call last week and provided an update on Fixed Wireless – that update indicated that 2022 + 2023 are still peaking for Fixed Wireless but then there would be a 40% in 2024 and 2025 – so it will normalize in the outlying years, however. the next year and half will see high growth for particularly T-Mobile but also Verizon --- but take note that even as they decelerate in the coming years, they will still be growing. Please see attached document Altice shared with the group – particularly Page 50 of this deck.

Cox notes that T-Mobile has publicly stated that their network will handle about 9-9.5% FWA penetration and right now they are about at 1.5% so any way this is sliced there's about 3 years of growth.

**Open Mic Session: Time for sharing! What are people doing new/different in competitive messaging and/or retention they can share?**

Cox

Cox is in mid progress in terms of messaging – they have two Ookla claims which are "America's fastest download speeds" and "More reliable than Fixed Wireless" the latter is the second FWA message as they are also running a message that sates "Faster than Fixed Wireless". Cox is doing additional work on how they are positioning their network – they are working on a broader network message which will include network positioning and Internet superiority that doesn't get specific to network types.

Cox has worked with Ookla to ingest all the data of Cable and Fixed Wireless providers and mined that data on an hour-by-hour basis through peak times as well as less congested times, so they are able to land the data to support the claim of reliability.

Cox's new competitive network messaging is meant to fight fiber.

Question from Cox – *Did any MSOs have a debate on whether to spread awareness about FWA?*

- Charter tracked down the old "web hog" AT&T videos from 20 years ago that was used against Cable and are thinking about whether to run a similar ad now against FWA. "Web Hog" video: https://www.youtube.com/watch?v=k0Rg55bVA5g
- CTAM notes that in the Q2 Mover Study a question about FWA awareness was included and awareness of the product was high so there is not much risk for MSOs to discuss FWA in their messaging.

CTAM question – Regarding municipal fiber providers and private equity providers, how are MSOs handling them as competition?

- Cox has a Competitive Fiber Playbook that ranks competitive fiber into 4 different risk categories – low through high. In the playbook the higher the risk, the more aggressive Cox will be – the risk is categorized by the quality of the competitor's brand, penetration history performance in the industry, pricing etc. Cox has a well thought through inner disciplinary plan that covers GA, PA, marketing, pricing, sales, and network build to direct them on how to respond to specific competitors.
- Altice is in the process of developing a plan similar to Cox's Competitive Fiber Playbook. Altice is seeing new overbuilders in their markets nearly daily from small local co-ops to larger providers who are in many of their markets. Altice is looking at many variables for their competitors – they use ComLink for intel and

they have their own internal tracking of competitors. They note the messaging from overbuilders is mostly on Speed, Fiber and local.

- Armstrong operates several head ins in small nonmetropolitan communities, so they also have a number of small overbuilders. Armstrong has tried to focus on building the relationship with the customer that many overbuilders are short term operators and that they do not have the infrastructure to support what they are trying to sell. Armstrong notes that the issue is that the customer sees no risk in trying another provider because they know they can come back to Cable and most likely get a new customer plan.
    - Cox notes that Public Affairs and Government Affairs (PAGA) is very important part of the plan to compete with overbuilders.
- Charter agrees that the collaboration with government affairs is an important piece of the plan to combat overbuilders. Charter has started using a product called Curate as an early detection tool. Curate scans the minutes of public hearings, and it has been a very useful tool as you are able to scan keywords and look for such terms as “fiber”, “greenlight”, etc. and given the opportunity to learn about projects months before they are up for vote, etc. Link to Curate here: https://www.curatesolutions.com

## Next Steps

CTAM noted that Competition & Retention should continue into 2023 and will bring this up during the October Co-op Board meeting for board approval.

Presentation: *NSR Autumn for Broadband*


# Autumn for Broadband (Part VI) - Global Weekly Review

August 15, 2022 by Jonathan Chaplin

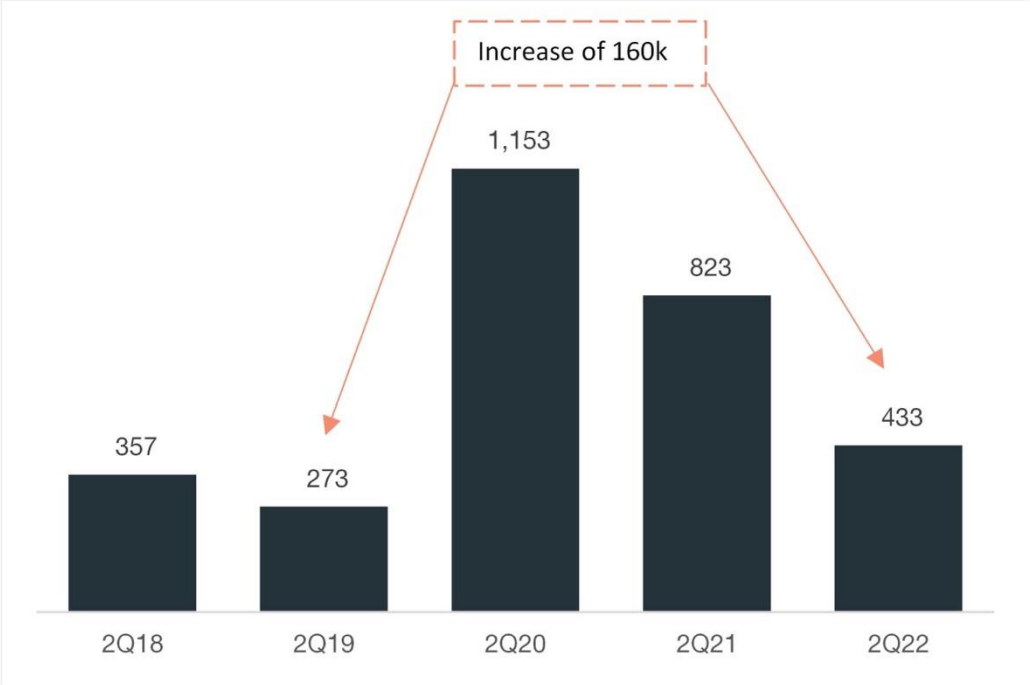
In Part VI of Autumn for Broadband series, we review what happened in the three-way fight between Cable, fiber, and fixed wireless broadband in 2Q22, based on the results of nine of the largest broadband companies. Like the last edition, we focus on trends in the residential market rather than the overall market.

The punchline: residential broadband market growth is solid overall. Growth this quarter was a little higher than second quarters prior to the pandemic. This suggests that FWB is still expanding the market (or we have the business / consumer mix for T-Mobile wrong). Among the competitors, FWB is taking share, the telcos are relatively steady, and Cable is having a tough time.

**Residential broadband market growth was strong in 2Q**

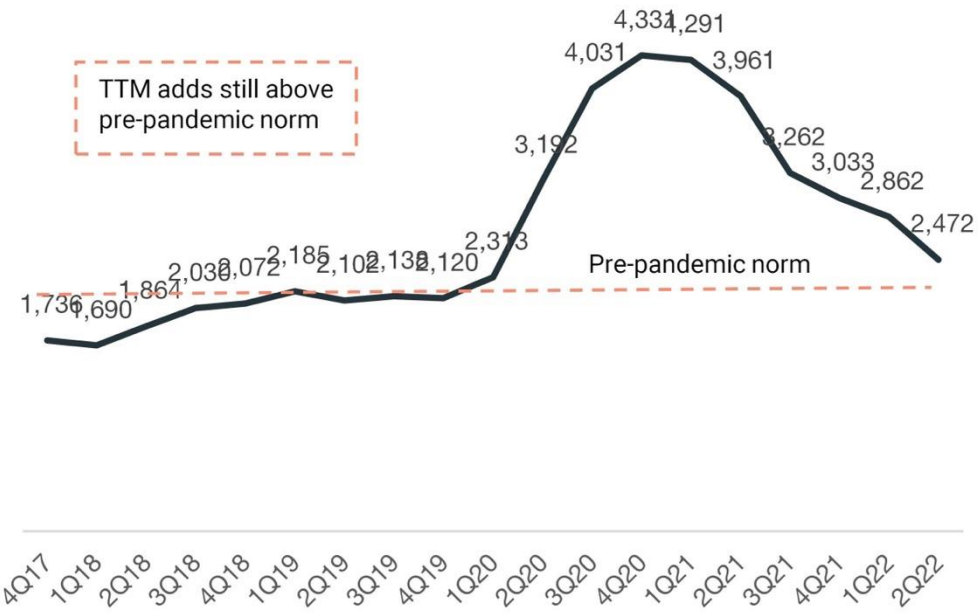
Based on the nine companies we track that make up roughly 85% of the market , the broadband market added close to 430k subscribers in 2Q22. That is higher than the 270-360k reported in the years preceding the pandemic (we ignore 2020 and 2021 given unusual pandemic impacts). The slowdown in Cable can't be attributed to a market slowdown. Market penetration appears to be growing at a pace of 1.7% (on top of HH growth of 0.9%).

**Figure 1: Broadband industry net adds – 2Q18 to 2Q22**




**Source: NSR; Company data**

**Figure 2: TTM broadband industry net adds**

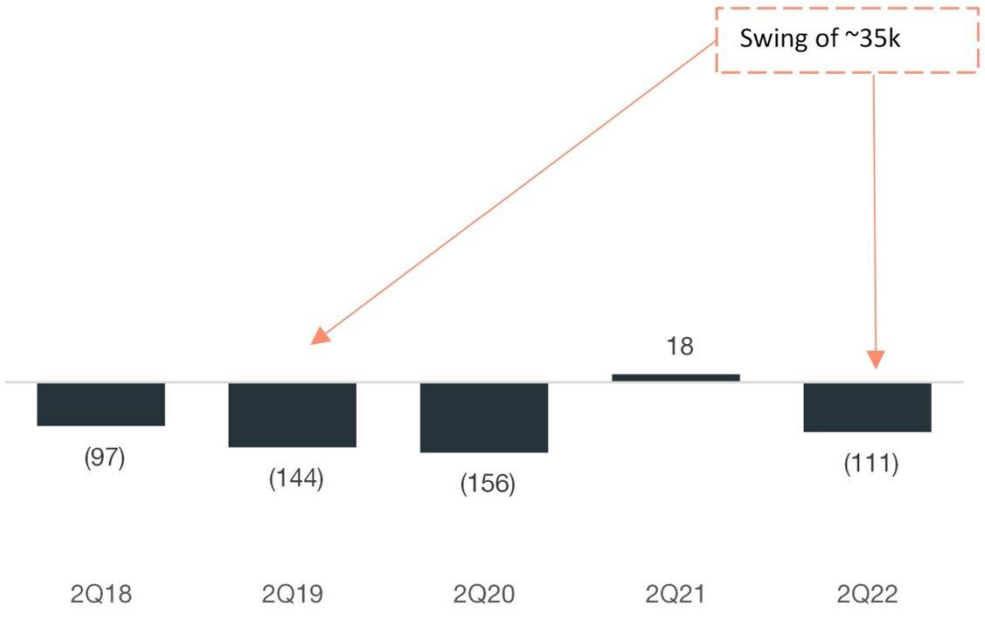



**Source: NSR; Company data**

**The ILECs are slightly better, Cable is a whole lot worse**

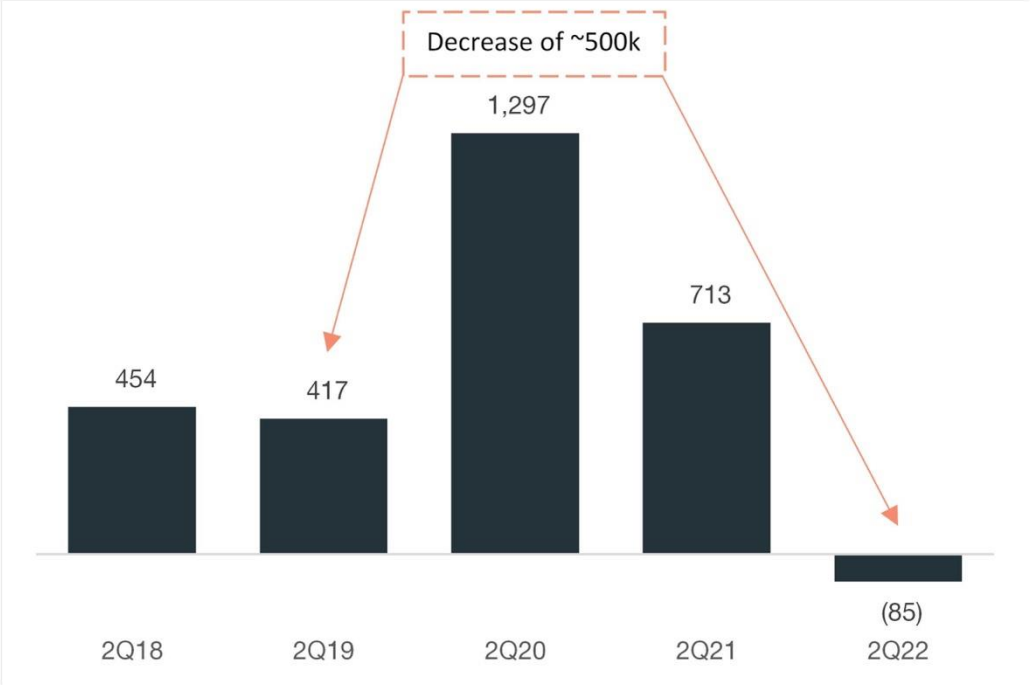
The ILECs have gone from losing ~145k residential subs in 2Q19 to losing ~110k in 1Q22. They are doing slightly better, though a swing of ~35k subs on a base of 28MM is inconsequential. Cable residential broadband adds turned negative for the first time ever. Cable lost 85k customers in 2Q22 compared to adding ~420k in 2Q19.

**Figure 3: ILECs broadband net adds – 2Q18 to 2Q22**




**Source: NSR; Company data**

**Figure 4: Cable broadband net adds – 2Q18 to 2Q22**

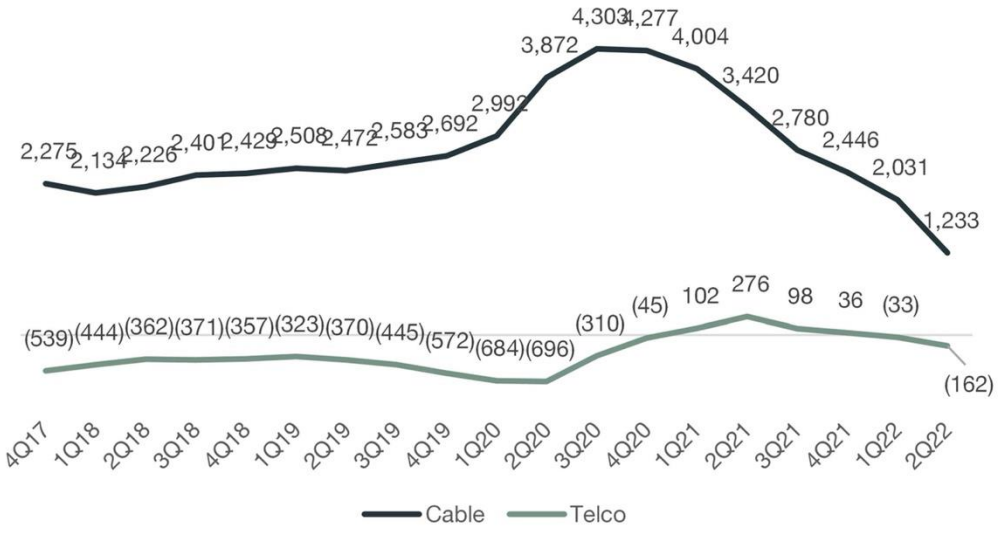



**Source: NSR; Company data**

**Cable is still taking share among fixed broadband providers…but less**

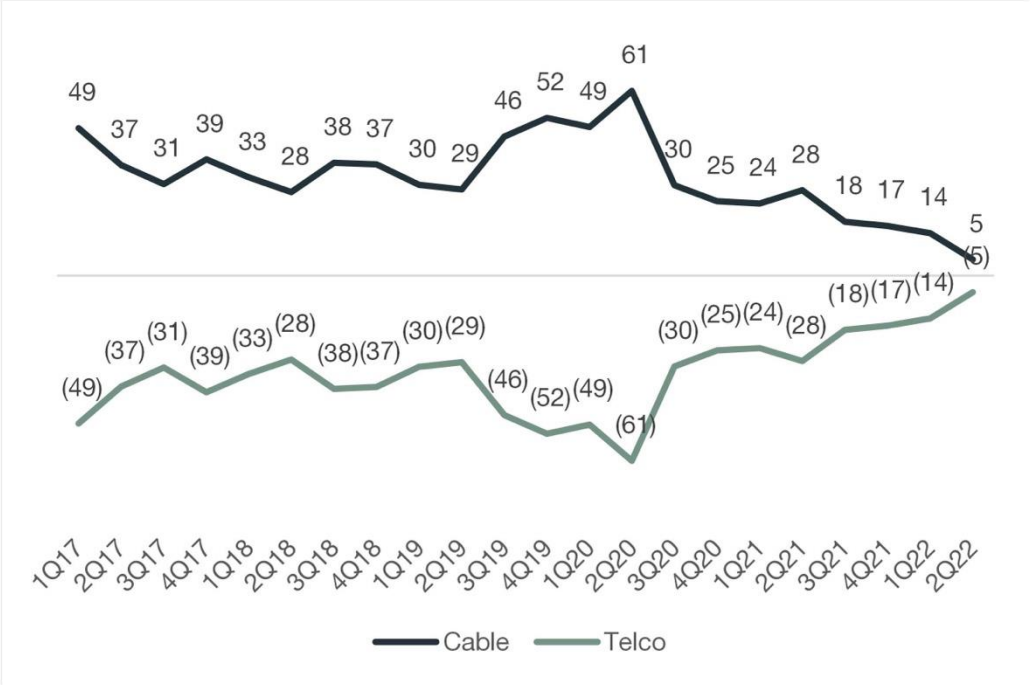
Over the trailing twelve months, Cable's net adds have slowed considerably but they have continued to take share in the fixed broadband market, though at a slower pace than before (note: these are TTM numbers that benefit from stronger growth in 2H21).

**Figure 5: TTM broadband net adds – Cable vs. ILECs (excluding FWB)**




**Source: NSR; Company data**

**Figure 6: Change in market share – Cable vs. ILECs (excluding FWB)**

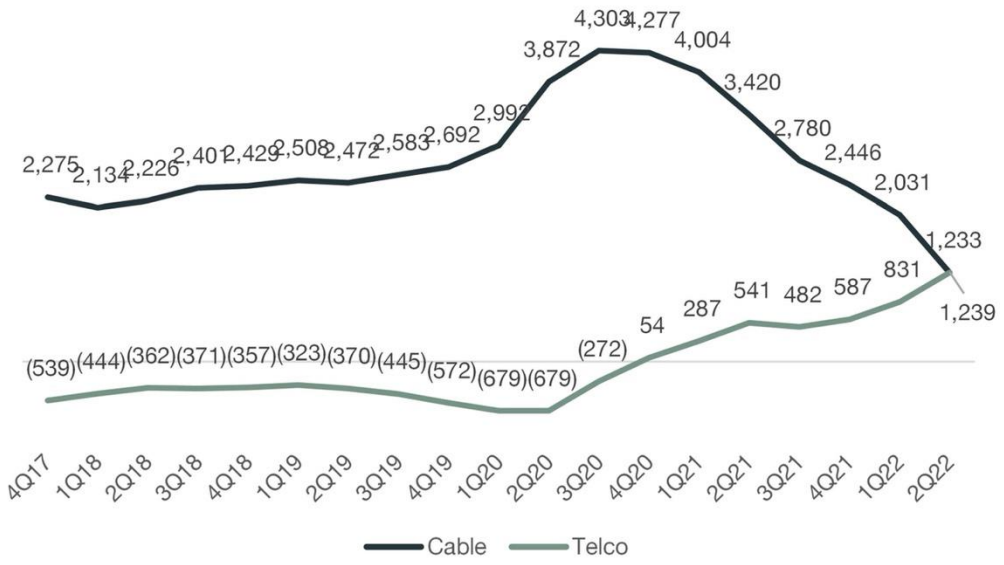



**Source: NSR; Company data**

**Cable is losing share of the total broadband market (including FWB)**

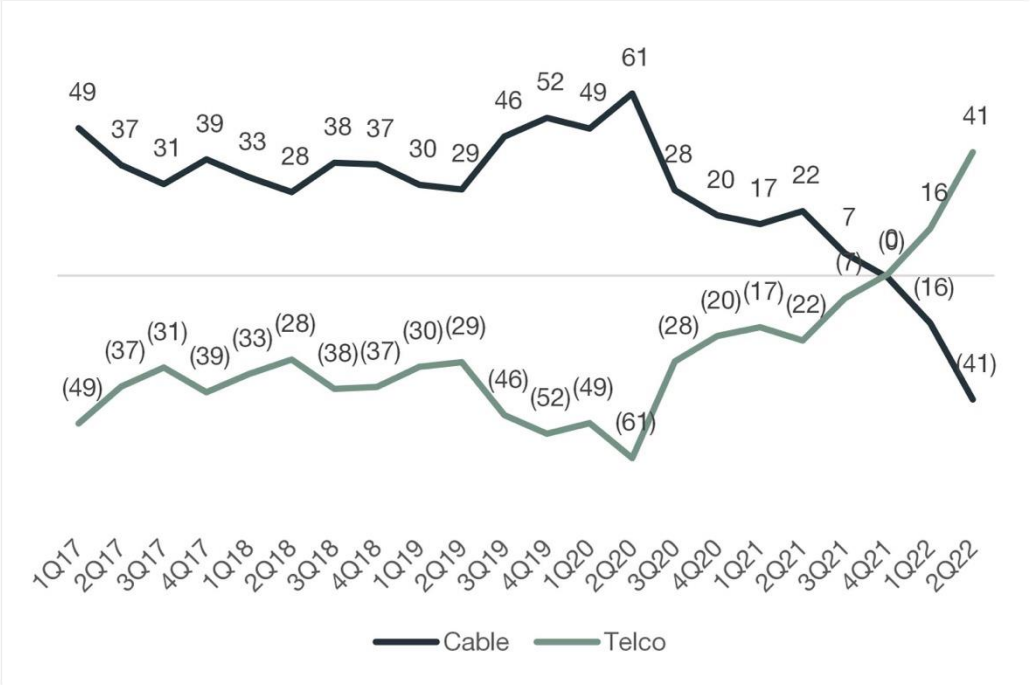
If we layer in FWB, Cable lost share of the overall broadband market over the trailing twelve months. This is the second quarter in a row where Cable has convincingly lost share on a TTM basis in the residential broadband market.

**Figure 7: TTM broadband net adds – Cable vs. ILECs (including FWB)**




**Source: NSR; Company data**

**Figure 8: Change in market share – Cable vs. ILECs (including FWB)**

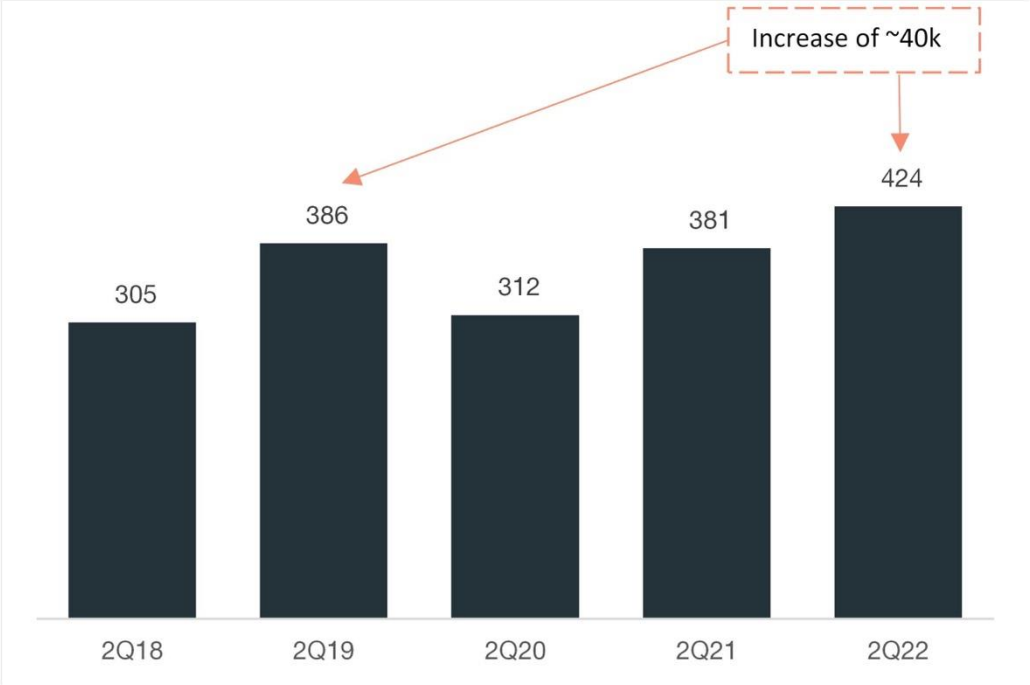



**Source: NSR; Company data**

**Fiber adds improved and copper losses flat**

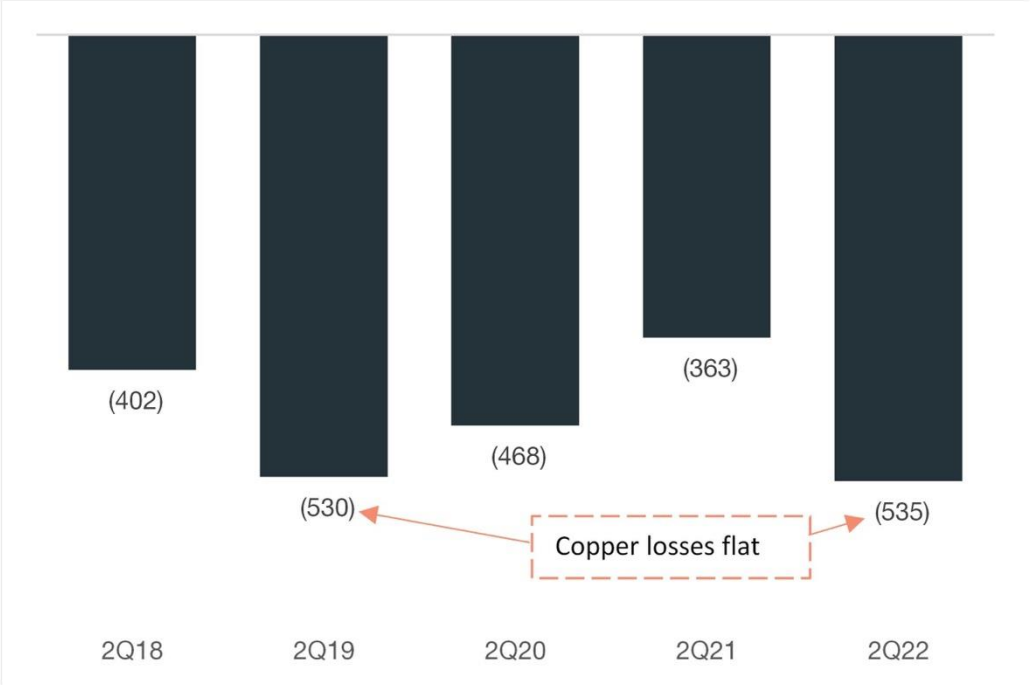
ILEC fiber net adds have improved by only ~40k, despite an increase in locations passed by fiber over the last three years of 8MM+. Copper losses are nearly flat, leading to a swing of ~35k in ILEC losses.

**Figure 9: Fiber broadband net adds – 2Q18 to 2Q22**




**Source: NSR; Company data**

**Figure 10: Copper broadband net adds – 2Q18 to 2Q22**

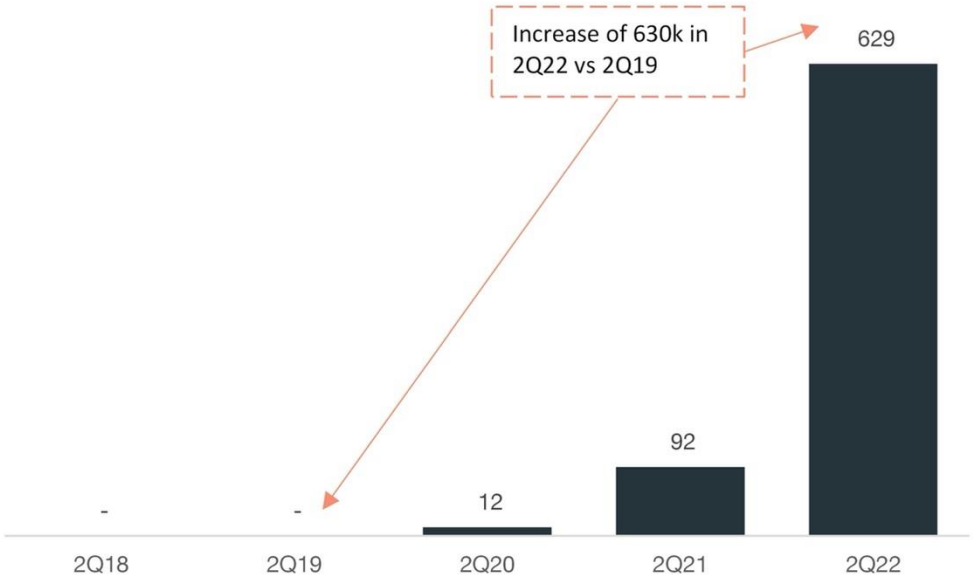



**Source: NSR; Company data**

**Fixed wireless broadband surged…**

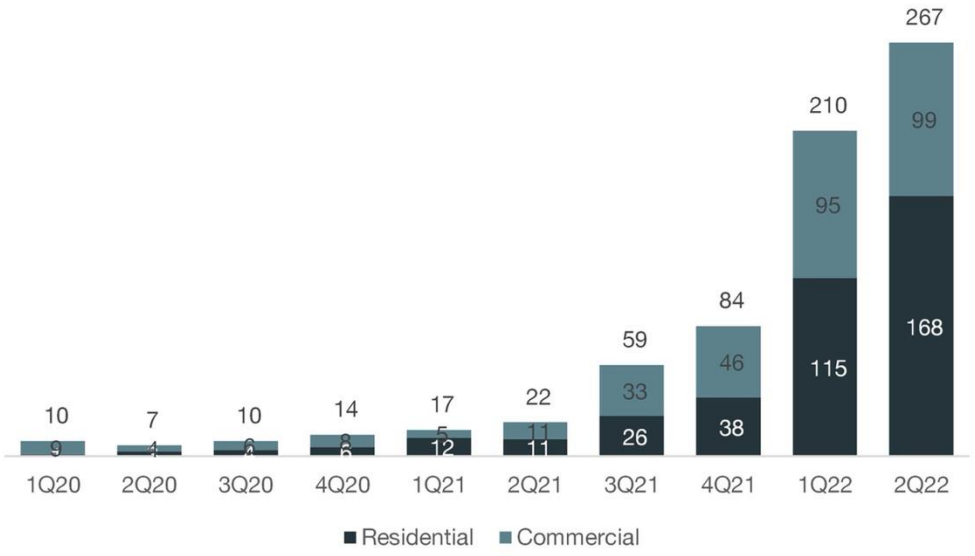
We estimate that T-Mobile and Verizon added ~630k residential FWB subs in 2Q22 compared to 0 in 2Q19 and prior years. Verizon reports residential FWB subs. T-Mobile has given some context on the split, but we have had to fill in the gaps with estimates. This is one area, where the analysis is weakened by insufficient data.

**Figure 11: FWB net adds (2Q18 – 2Q22)**



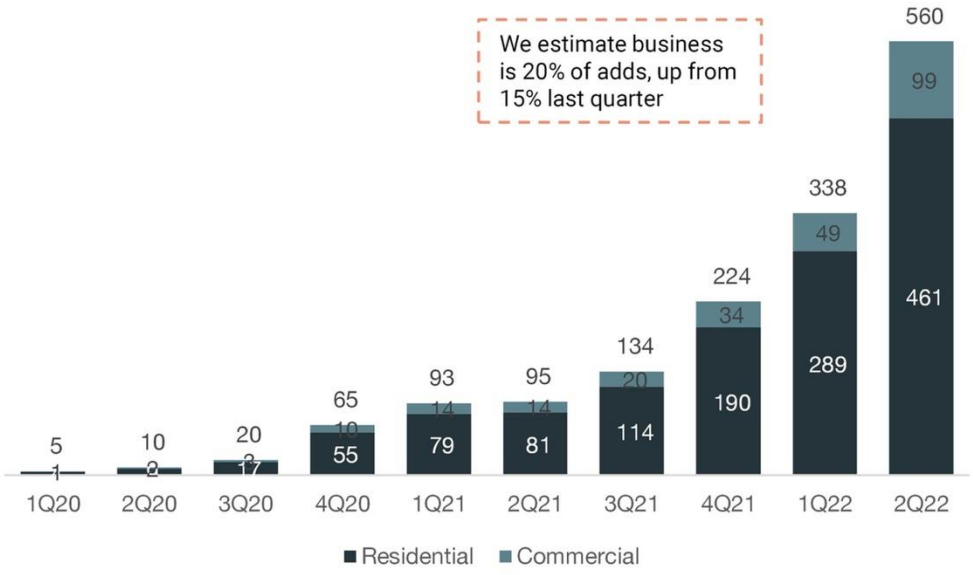

**Source: NSR; Company data**

**Figure 12: Verizon FWB net adds split by residential and commercial**




**Source: NSR; Company data**

**Figure 13: Our estimate for T-Mobile FWB net adds split by residential and commercial**

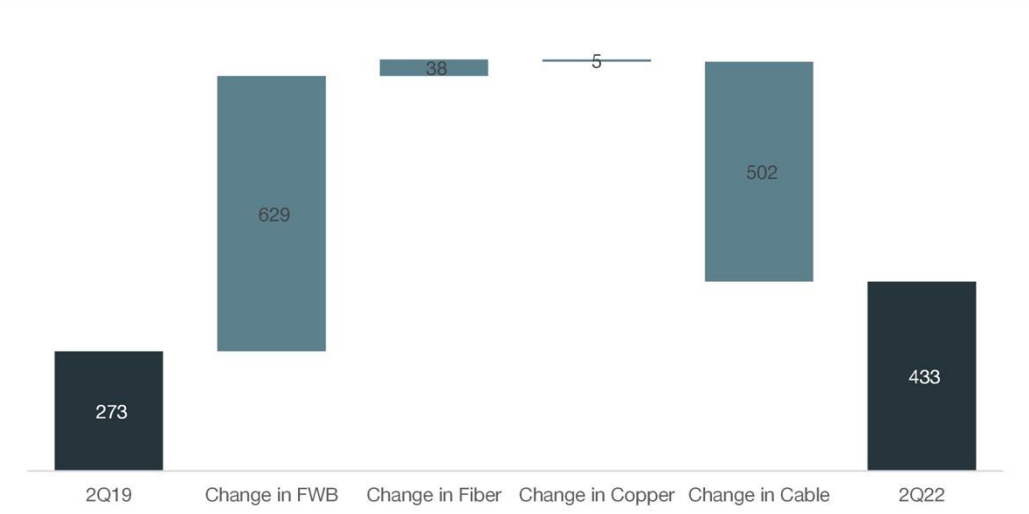



**Source: NSR; Company data**

**It looks like FWB is driving all of the pressure on Cable…**

With FWB adding more than the decline in Cable adds, the simplest conclusion is that FWB is taking share from Cable, but we know this isn't the entire story because T-Mobile has told us that they are capturing a little more than half of their adds from cable. The ILEC's fixed broadband adds are very slightly better, suggesting no impact from FWB; however, that can't be the whole story either.

**Figure 14: Walkthrough from 2Q19 to 2Q22 broadband net adds**




**Source: NSR; Company data**

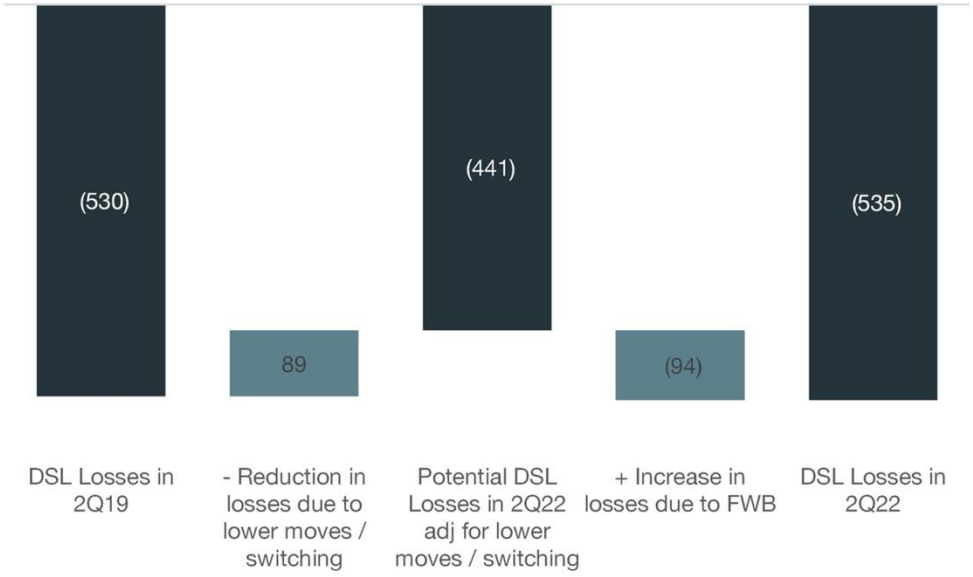
**...but reality is probably more complex, starting with DSL**

In our last iteration of this report, we proposed the alternate hypothesis that DSL churn had 1) benefitted from lower moves and switching and 2) suffered from FWB incursions. Taken together, DSL losses were roughly flat, and churn was consistent with pre-pandemic levels. We didn't have the data to prove this out, but it was a neat way to tie comments made by Cable management teams together with the available reported data.

We are sticking with this hypothesis this quarter, and we have a few more data points to help puzzle it out. Starting with the punchline below, we estimate that ~95k FWB adds came from DSL in 2Q22 based on comments made by T-Mobile (see Figure 25 below ). FWB wasn't around in 2019, so this would have driven an increase in DSL losses of ~95k, all else being equal.

All else isn't equal; moves and switching are down too. The decline in moves and switching would have benefitted DSL as a share loser. However, we know that DSL losses only increased by 5k suggesting an offset to this benefit elsewhere. If FWB and moves / switching are the only things driving DSL losses, then it would stand to reason that lower moves and switching improved DSL losses to the tune of 90k.

**Figure 15: Illustrative walkthrough from 2Q19 to 2Q22 DSL net losses**

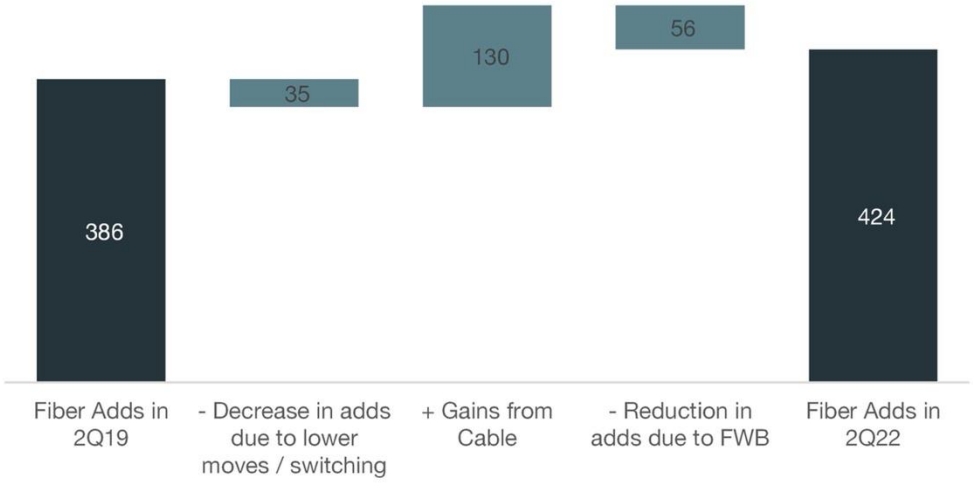



**Source: NSR; Company data**

**Reality is more complex for Fiber too**

Fiber adds are up ~40k. We estimate that ~55k FWB adds came from fiber in 2Q22 (see Figure 25). Unlike DSL, lower moves & switching works in the opposite direction for fiber – it lowers fiber adds. If fiber adds were lower by ~35k due to lower moves & switching, it implies that fiber took 130k adds from Cable after accounting for impact of lower moves & switching and reduction in adds due to FWB.

**Figure 16: Illustrative walkthrough from 2Q19 to 2Q22 Fiber net adds**




**Source: NSR; Company data**

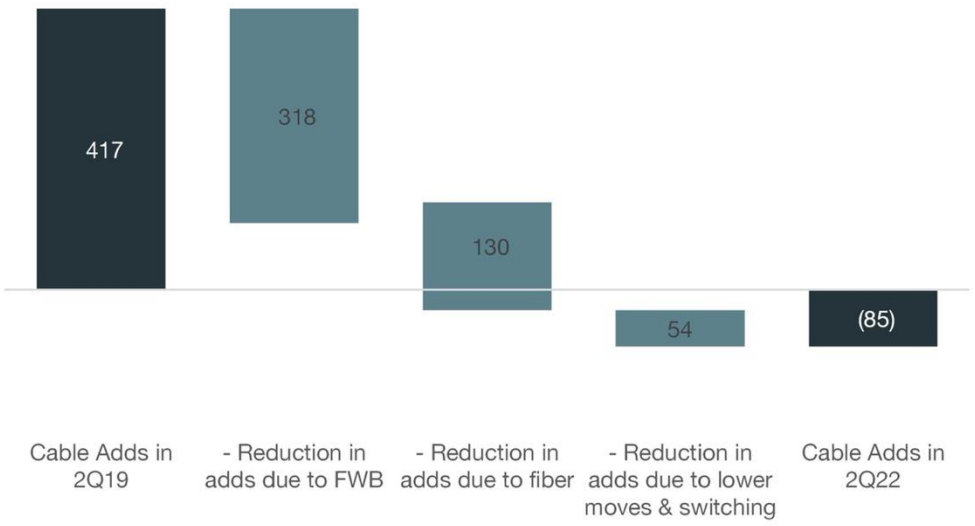
**FWB may not be the biggest driver of Cable pressure**

Sticking with the punchline (we will walk through the baseless assumptions and leaps of logic required to get here in a second): FWB may have accounted for ~60% of the decline in Cable net adds. This is quite different from our starting point, which suggested FWB was more than 100% of the problem.

This still doesn't capture the reality that Cable is speaking to. Net adds for Cable are the difference between gross adds of 3.5M-5.0M and disconnects of 3.0-4.0MM. Relatively small changes in either driver can have a big impact on the result. We suspect that the change in FWB gross adds may be less than 10% of Cable gross adds but it accounts for nearly 40% of the change in Cable gross adds. This is what Cable management teams could be speaking to when they say that FWB is having an impact, but it isn't the biggest driver of the pressure they are experiencing.

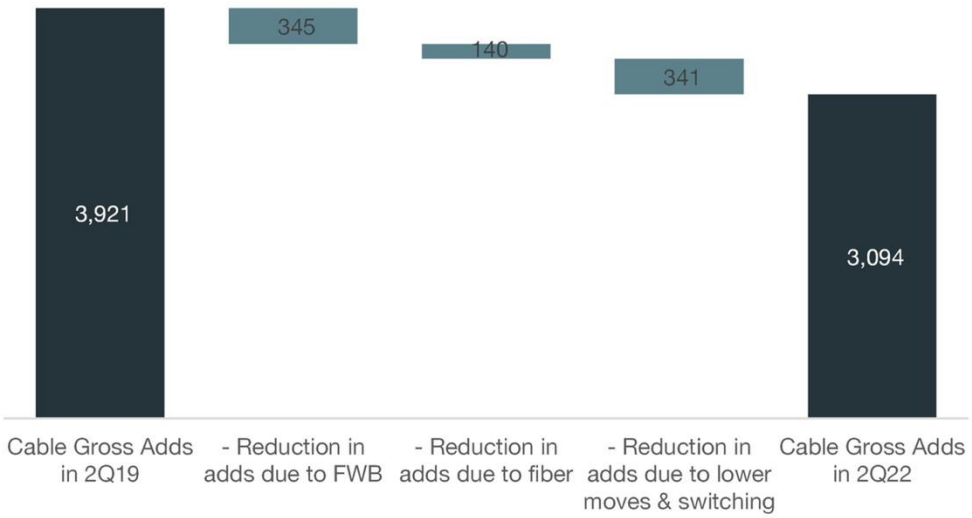
To round out the story, if FWB accounts for ~320k of the change in net adds, and fiber accounted for 130k, then lower moves and switching account for 54k (assuming that these are the only drivers). Similarly, if FWB accounts for ~345k (42%) of the change in gross adds, and fiber accounted for 140k (17%), then moves and switching account for 340k (41%). We will get to the breakdown between moves and switching in a second.

**Figure 17: Illustrative walkthrough from 2Q19 to 2Q22 Cable net adds**




**Source: NSR; Company data**

**Figure 18: Illustrative walkthrough from 2Q19 to 2Q22 Cable gross adds**




**Source: NSR; Company data**

**Gross adds vs net adds**

T-Mobile and Verizon have provided context for where their adds are coming from. By "adds" they mean "gross adds" (we assume). In order to make sense of the trends, we first have to estimate FWB gross adds, which means we have to estimate FWB churn. This is hard because it's a new product ramping quickly, and early churn isn't representative of "normal" churn.

If we use app download data as an indicator of gross adds, based on net adds, we would arrive at churn of 4-8% for T-Mobile. We know this isn't quite right because not every app download results in a gross add (mistaken downloads; duplicate downloads in a household; downloads that don't convert to subscribers; etc.). FWB churn must be lower than this.

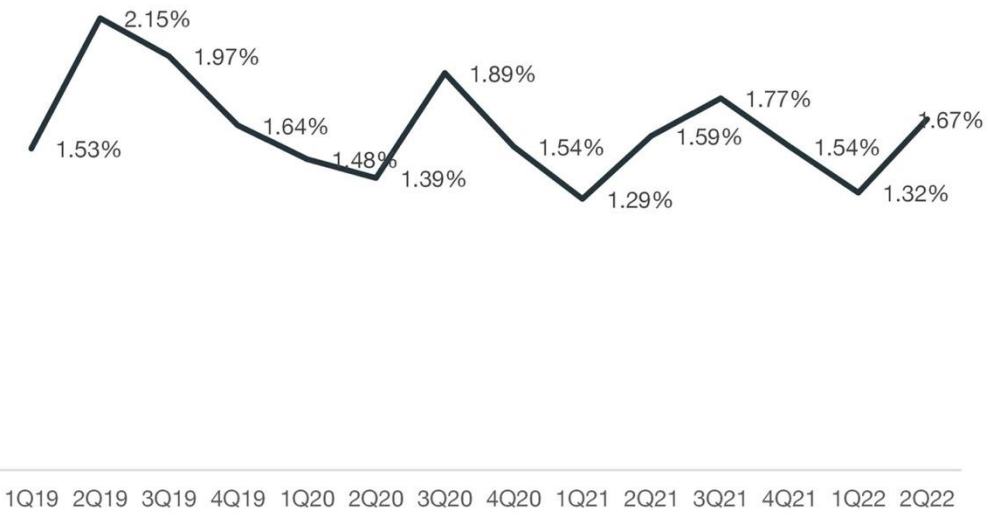
We have an estimate for broadband churn based on disclosure form Shentel and Frontier. For lack of perfect information, we assume FWB churn is same as normal broadband churn (based on Shentel cable churn). We then use this to back into FWB gross adds. We then back into the conversion ratio from downloads to gross adds.

**Figure 19: T-Mobile conversion ratio based on app download data and assumed churn**

| Total Subs | Jan | Feb | Mar | 1Q22 | Apr | May | Jun | 2Q22 |
|---|---|---|---|---|---|---|---|---|
| Subs - BOP | 646 | 734 | 844 | **646** | 984 | 1,117 | 1,324 | **984** |
| App downloads | 113 | 141 | 178 | **432** | 203 | 304 | 328 | **835** |
| Gross adds | 96 | 120 | 151 | **367** | 150 | 225 | 242 | **617** |
| Churn | (9) | (10) | (11) | **(29)** | (16) | (19) | (22) | **(57)** |
| Subs - EOP | 734 | 844 | 984 | **984** | 1,117 | 1,324 | 1,544 | **1,544** |
| *memo: Net adds* | *88* | *110* | *140* | ***338*** | *133* | *206* | *220* | ***560*** |
| *memo: Churn rate* | *1.32%* | *1.32%* | *1.32%* | ***1.32%*** | *1.67%* | *1.67%* | *1.67%* | ***1.67%*** |
| *memo: Conversion ratio (Gross adds / app downloads)* | *85%* | *85%* | *85%* | ***85%*** | *74%* | *74%* | *74%* | ***74%*** |

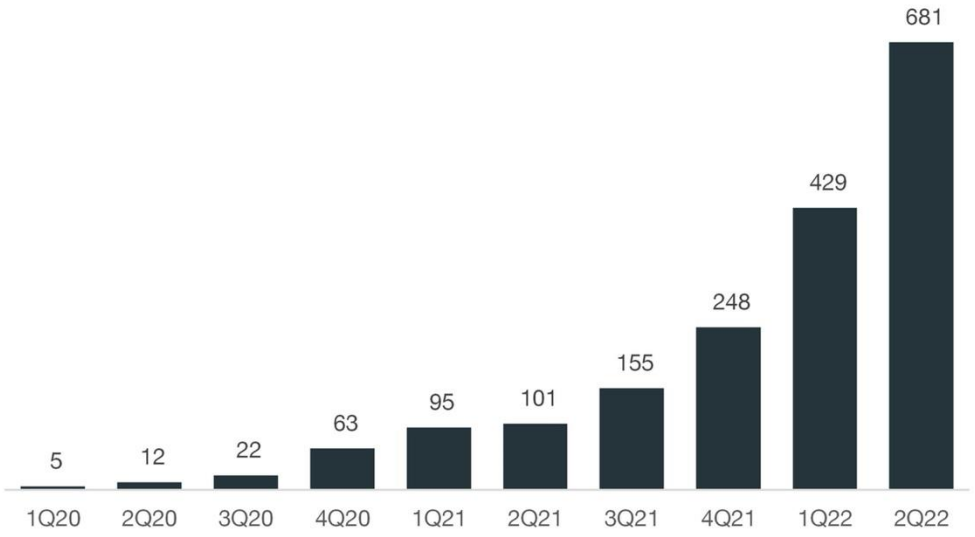
**Source: NSR; Company data**

**Figure 20: Normal broadband churn based on Shentel cable churn**




**Source: NSR; Company data**

**Figure 21: FWB gross adds**




**Source: NSR; Company data**

**Dissecting FWB gross adds**

T-Mobile and Verizon have given us a few clues on where their FWB adds are coming from. We used these data points to build the matrix below.

Verizon discloses that 34% of their FWB adds are business. T-Mobile has said the business mix for them is much lower but rising. We think 20% is a good number to use. We are focused on the consumer market in this analysis, so we pull business out.

Then T-Mobile says that more than half of their adds come from Cable. We assume this is true of consumer specifically. The remainder is drawn from DSL, Satellite, Fiber, and subscribers that are new to the market (probably in that order).

T-Mobile has also said that two thirds of the adds are in top 100 markets, with the rest coming from small markets and rural. We don't need this detail to solve the matrix, but it may come in handy at some point and so we include it in the table below.

Verizon gave a great breakdown of business adds for FWB: 20% of their adds are "non-primary"; of the remaining 80%, half are use cases that terrestrial broadband providers can't compete for (food trucks;

construction sites; COVID testing sites; etc.); the remainder come from terrestrial. Terrestrial providers include Cable, Fiber, and DSL (in that order; Satellite negligible).

Verizon didn't give the same breakdown for Consumer, but we suspect the breakdown for them is similar to the breakdown that we arrived at for T-Mobile. From this, we derive the distribution below.

Putting it together, we estimate that 414k FWB gross adds came from Cable and 345k came from Cable households (the consumer market).

**Figure 22: T-Mobile FWB gross adds**

| | Consumer | Business | Total | Consumer | Business | Total |
|---|---|---|---|---|---|---|
| Top 100 markets | 330 | 71 | 401 | 66% | 66% | 66% |
| Small Markets and Rural | 170 | 37 | 206 | 34% | 34% | 34% |
| **Total** | **499** | **108** | **607** | **82%** | **18%** | **100%** |
| | | | | | | |
| Existing markets | 449 | 97 | 546 | 90% | 90% | 90% |
| New markets | 50 | 11 | 61 | 10% | 10% | 10% |
| **Total** | **499** | **108** | **607** | **82%** | **18%** | **100%** |

| | Existing Markets | | | | | |
|---|---|---|---|---|---|---|
| | Consumer | Business | Total | Consumer | Business | Total |
| Cable | 252 | 50 | 301 | 56% | 51% | 55% |
| DSL | 73 | 28 | 101 | 16% | 29% | 19% |
| Fiber | 49 | 19 | 67 | 11% | 20% | 12% |
| Satellite | 76 | - | 76 | 17% | 0% | 14% |
| **Total** | **449** | **97** | **546** | **82%** | **18%** | **100%** |

**Source: NSR; Company data**

**Figure 23: Verizon FWB gross adds**

| | Consumer | Business | Total | Consumer | Business | Total |
|---|---|---|---|---|---|---|
| New use cases | - | 38 | 38 | 0% | 40% | 14% |
| Existing use cases | 182 | 57 | 239 | 100% | 60% | 86% |
| **Total** | **182** | **95** | **278** | **66%** | **34%** | **100%** |

| **Existing use cases** | Consumer | Business | Total | Consumer | Business | Total |
|---|---|---|---|---|---|---|
| Primary use | 146 | 38 | 184 | 80% | 67% | 77% |
| non-primary use | 36 | 19 | 56 | 20% | 33% | 23% |
| **Total existing use cases** | **182** | **57** | **239** | **76%** | **24%** | **100%** |

**Primary use cases**

| | Consumer | Business | Total | Consumer | Business | Total |
|---|---|---|---|---|---|---|
| Cable | 93 | 20 | 113 | 64% | 51% | 61% |
| DSL | 30 | 11 | 41 | 20% | 29% | 22% |
| Fiber | 13 | 7 | 20 | 9% | 20% | 11% |
| Satellite | 10 | - | 10 | 7% | 0% | 6% |
| **Total** | **146** | **38** | **184** | **79%** | **21%** | **100%** |

**Source: NSR; Company data**

**Figure 24: Total FWB gross adds**


| | Consumer | Business | Total | Consumer | Business | Total |
|---|---|---|---|---|---|---|
| New use cases | - | 38 | 38 | 0% | 40% | 14% |
| Existing use cases | 182 | 57 | 239 | 100% | 60% | 86% |
| **Total** | **182** | **95** | **278** | **66%** | **34%** | **100%** |

| **Existing use cases** | Consumer | Business | Total | Consumer | Business | Total |
|---|---|---|---|---|---|---|
| Primary use | 146 | 38 | 184 | 80% | 67% | 77% |
| non-primary use | 36 | 19 | 56 | 20% | 33% | 23% |
| **Total existing use cases** | **182** | **57** | **239** | **76%** | **24%** | **100%** |

**Primary use cases**

| | Consumer | Business | Total | Consumer | Business | Total |
|---|---|---|---|---|---|---|
| Cable | 93 | 20 | 113 | 64% | 51% | 61% |
| DSL | 30 | 11 | 41 | 20% | 29% | 22% |
| Fiber | 13 | 7 | 20 | 9% | 20% | 11% |
| Satellite | 10 | - | 10 | 7% | 0% | 6% |
| **Total** | **146** | **38** | **184** | **79%** | **21%** | **100%** |

**Source: NSR; Company data**

**Figure 25: Total FWB net adds**

| Existing markets / Primary use cases | | | | | | |
|---|---|---|---|---|---|---|
| | Consumer | Business | Total | Consumer | Business | Total |
| Cable | 318 | 64 | 382 | 58% | 51% | 57% |
| DSL | 94 | 36 | 131 | 17% | 29% | 19% |
| Fiber | 56 | 24 | 81 | 10% | 20% | 12% |
| Satellite | 80 | - | 80 | 15% | 0% | 12% |
| **Total** | **549** | **125** | **674** | **81%** | **19%** | **100%** |

| New markets / Secondary use cases | | | | | | |
|---|---|---|---|---|---|---|
| | Consumer | Business | Total | Consumer | Business | Total |
| T-Mobile | 46 | 10 | 56 | 58% | 16% | 39% |
| Verizon | 34 | 53 | 86 | 42% | 84% | 61% |
| **Total** | **80** | **63** | **142** | **56%** | **44%** | **100%** |

| Total | | | | | | |
|---|---|---|---|---|---|---|
| | Consumer | Business | Total | Consumer | Business | Total |
| Existing markets | 549 | 125 | 674 | 87% | 67% | 83% |
| New markets | 80 | 63 | 142 | 13% | 33% | 17% |
| **Total** | **629** | **187** | **816** | **77%** | **23%** | **100%** |

**Source: NSR; Company data**

**Moves still may not be the biggest driver of Cable pressure either**

We have been publishing a dataset that tracks moves, using a combination of Census and USPS data (latest iteration here). We have used this to quantify the impact of lower moves on Cable. The slowdown in moves hurts Cable, but probably not as much as you think.

Lower moves hurt Cable in markets where they are taking share from DSL, but it helps them in markets where they are losing share to Fiber. Cable overlaps with Fiber in roughly 40% of the country and DSL in roughly 60%, but DSL has very low share and Cable has high share already in the portion of the country where Cable is taking share.

In the analysis below, we start with a baseline for moves and calculate Cable gross adds and disconnects in fiber and DSL markets in this scenario. We then do the same for the current scenario, where moves are down 10%. The difference between the two scenarios gives us the impact of lower moves on Cable net adds. It's not huge; lower moves account for perhaps 10% of the change in Cable net adds.

**Figure 26: Impact of lower moves on Cable net adds**

| | Fiber Markets | Copper Markets | Total |
|---|---|---|---|
| Baseline moves | | | 11,520,730 |
| x Cable footprint | | | 88% |
| = Moves in Cable Markets | 4,175,042 | 6,007,987 | 10,183,029 |
| *memo: Cable overlap* | *41%* | *59%* | |
| Cable gross adds | 2,087,521 | 5,407,189 | 7,494,710 |
| *memo: Cable's share of gross adds* | *50%* | *90%* | *74%* |
| Cable churn | 2,379,774 | 4,626,150 | 7,005,924 |
| *memo: Cable's share* | *57%* | *77%* | |
| Cable net adds | (292,253) | 781,038 | 488,785 |

| | Fiber Markets | Copper Markets | Total |
|---|---|---|---|
| Actual moves | | | 10,342,124 |
| x Cable footprint | | | 88% |
| = Moves in Cable Markets | 3,747,922 | 5,393,352 | 9,141,274 |
| *memo: Cable overlap* | *41%* | *59%* | |
| Cable gross adds | 1,873,961 | 4,854,016 | 6,727,978 |
| memo: Cable's share of gross adds | 50% | 90% | 74% |
| Cable churn | 2,136,316 | 4,152,881 | 6,289,196 |
| memo: Cable's share | 57% | 77% | |
| Cable net adds | (262,355) | 701,136 | 438,781 |

| | | | |
|---|---|---|---|
| **Net Change** | **29,898** | **(79,903)** | **(50,004)** |

**Source: NSR; Company data**

**Figure 27: Impact of lower moves on Telco net adds**

| | Fiber Markets | Copper Markets | Total |
|---|---|---|---|
| Baseline moves | | | 11,520,730 |
| x Cable footprint | | | 88% |
| = Moves in Cable Markets | 4,175,042 | 6,007,987 | 10,183,029 |
| *memo: Cable overlap* | *41%* | *59%* | |
| | | | |
| Telco gross adds | 2,087,521 | 600,799 | 2,688,320 |
| *memo: Telco share of gross adds* | *50%* | *10%* | *26%* |
| | | | |
| Telco churn | 1,795,268 | 1,381,837 | 3,177,105 |
| *memo: Telco's share* | *43%* | *23%* | |
| | | | |
| Telco net adds | 292,253 | (781,038) | (488,785) |

| | Fiber Markets | Copper Markets | Total |
|---|---|---|---|
| Actual moves | | | 10,342,124 |
| x Cable footprint | | | 88% |
| = Moves in Cable Markets | 3,747,922 | 5,393,352 | 9,141,274 |
| *memo: Cable overlap* | *41%* | *59%* | |
| | | | |
| Telco gross adds | 1,873,961 | 539,335 | 2,413,296 |
| *memo: Telco share of gross adds* | 50% | 10% | 26% |
| | | | |
| Telco churn | 1,611,607 | 1,240,471 | 2,852,077 |
| *memo: Telco's share* | 43% | 23% | |
| | | | |
| Telco net adds | 262,355 | (701,136) | (438,781) |

| | | | |
|---|---|---|---|
| **Net Change** | **(29,898)** | **79,903** | **50,004** |

**Source: NSR; Company data**

**Moves are not the only environmental factor**

The gross add pool is lower because of lower moves, but also because of depressed switching activity. There is an intuitive case for this: switching spiked during the pandemic and so it ought to slow for a period

subsequently. We have no way of quantifying this independently and so we use it as the plug to solve the equation (we need a plug anyway).

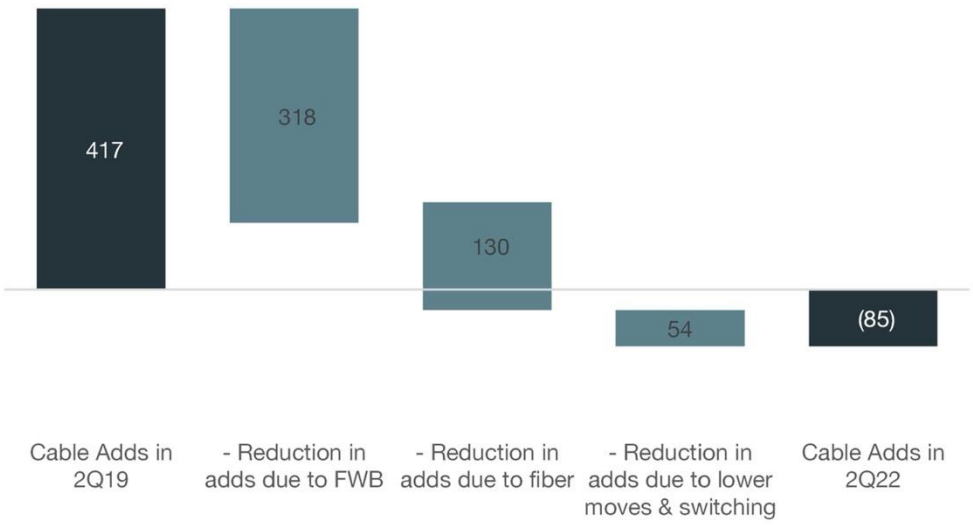
**Putting it all together**

From the perspective of Cable, we have the following picture: adds are down by 502k; 318k of the decline is due to FWB, 130k due to fiber, and 54k is due to lower moves and switching. FWB is a bigger driver than moves, switching, and fiber, but it doesn't account for most of the shortfall (the other factors are bigger collectively).

From the perspective of the ILECs: adds are up by 33k; ILECs benefitted 130k from Cable; FWB created pressure of 151k; moves and switching helped by 54k.

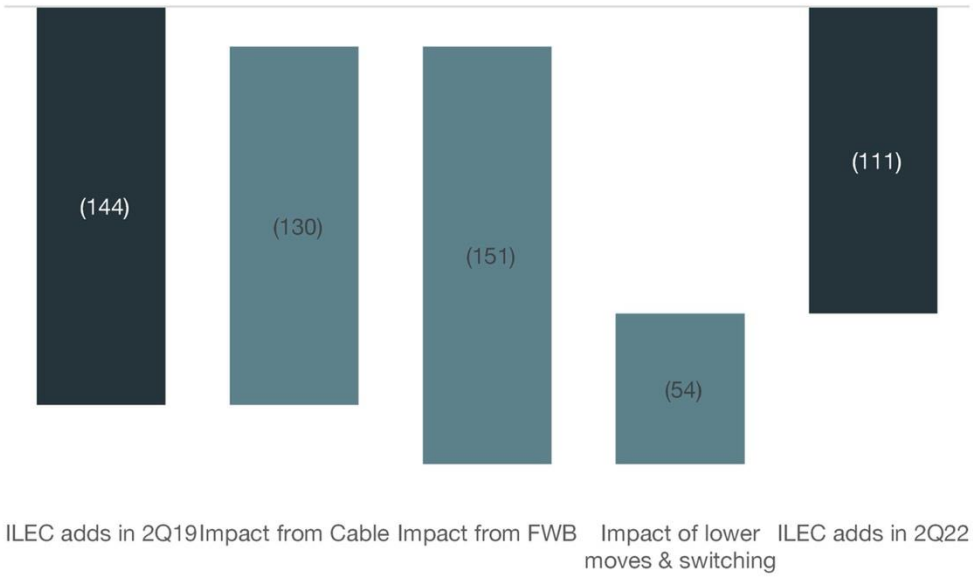
From the perspective of FWB: they increased adds by 629k; 318k came from cable; 56k from fiber; 94k from DSL; with the balance from satellite or new to the market.

**Figure 28: Walkthrough of Cable adds from 2Q19 to 2Q22**



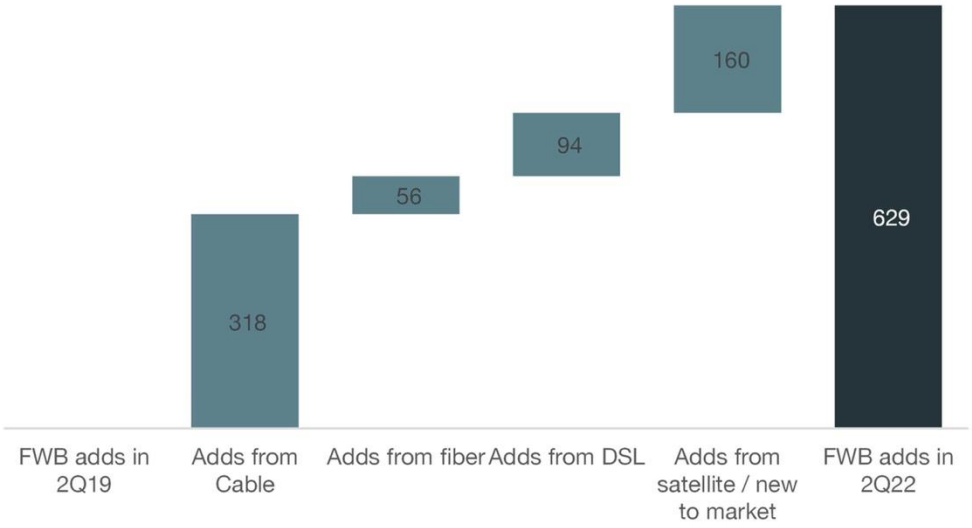

**Source: NSR; Company data**

**Figure 29: Walkthrough of ILEC adds from 2Q19 to 2Q22**




**Source: NSR; Company data**

**Figure 30: Walkthrough of FWB adds from 2Q19 to 2Q22**




**Source: NSR; Company data**

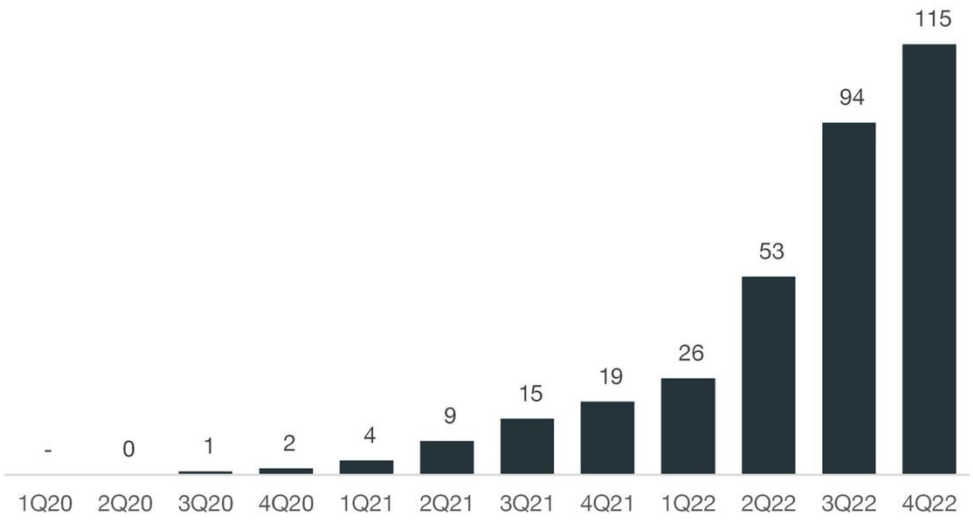
**What comes next**

We usually attempt to predict how the trends we dissect in the quarter just passed will drive results in the quarter to come. We are going to save that for a bigger report that we hope to publish at the end of next week. We have some fun analysis underway that we hope will yield some interesting insights.

One small preview: up until now, FWB has been claiming rapidly increasing numbers of subscribers (gross adds) but giving up very little (disconnects). As the base grows, disconnects will grow. The gross adds have been taken from Cable, fiber, and DSL. We think very few of those that came from DSL will go back to DSL. This will act as a small tailwind for Cable and Fiber in future quarters.

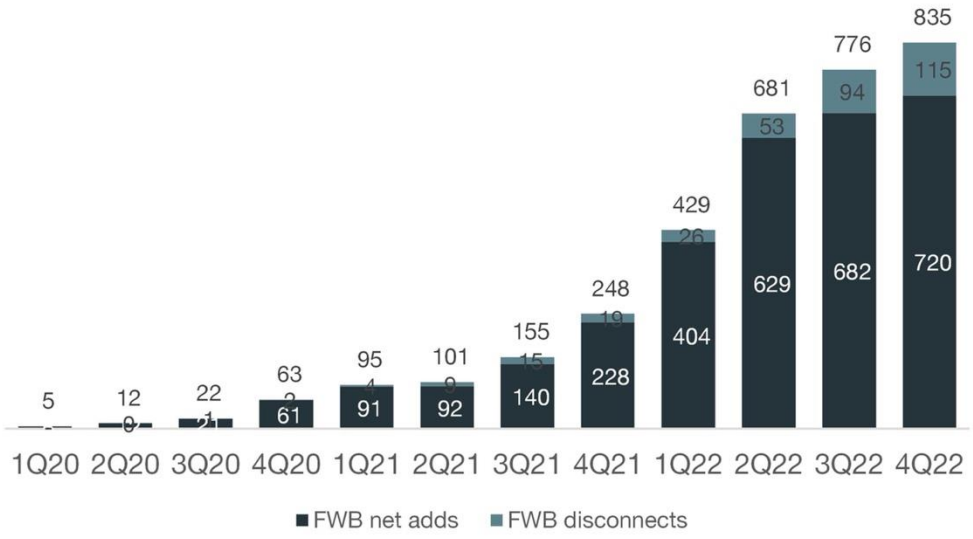
We also suspect that FWB gross adds will grow at a slower pace going forward. As disconnects catch up, net adds should level off, and eventually decline.

**Figure 31: FWB disconnects**




**Source: NSR; Company data**

**Figure 32: FWB gross adds split by net adds and disconnects**




**Source: NSR; Company data**

[1] We used to track ten companies. We dropped Mediacom from our total as they have stopped publishing results publicly. As such, the annual totals for historical periods we show in this iteration will be slightly different from prior iterations. [2] All the charts in this report reflect results for the 9 big Cable and Telecom companies that account for ~85% of the industry. These include Comcast, Charter, Altice USA, Cable One, AT&T, Verizon, Frontier, Lumen and T-Mobile. We are taking the view that the 9 largest companies are sufficiently representative of the industry for us to draw the conclusions we have. [3] We have used Shentel's cable churn as it seems representative of cable churn with seasonality. Frontier's fiber churn was quite elevated in 2019, probably due to poor management which led them to bankruptcy. As such, we haven't used Frontier's fiber churn for our analysis.

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## Presentation: *NSR Broadband Market Share Drivers*

NewStreet Research

# Broadband Market Share Drivers

Chapter 1: Purchasing Decision Drivers

*September 2022*


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**What's new:** We are launching a consumer survey series to explore the drivers of broadband market share. We will repeat the survey and publish results quarterly. The survey focuses on the drivers of purchasing decisions and churn, net promotor scores (NPS), and the drivers of satisfaction. We will publish results in a series of chapters, with this chapter focusing on the drivers of purchasing decisions. The insights we gleaned in this chapter will shape how investors think about the importance of broadband speeds, capital allocation strategies, and the risk to pricing.

**The survey:** We received 2,830 demographically representative survey responses with 2,205 qualified responses (confidence interval of 90%; margin for error of 5% at the provider level). We targeted 250 qualified responses for each of 10 target companies but fell short on FWB and small telcos. We will increase our level of investment in the survey pool as we improve the survey with subsequent iterations.

**Thesis impact:** The big insight from this chapter is that, while consumers claim speed is important when choosing a provider, the vast majority are satisfied with the speed they have, a surprisingly large number have no idea what speed they receive, and many of those that think they know have no idea either. This suggests that Cable doesn't have a speed problem; they have a marketing problem. If true, Cable doesn't need to accelerate capex to remain competitive. They also don't need to cut price. Cable does need to refocus their marketing narrative on their advantages: namely, their ability to deliver a high-quality, integrated experience that extends beyond broadband.



## Our working hypothesis: NPS predicts long-term market share trends

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We suspect the change in the NPS score of a carrier relative to their competitors will predict the direction of that carriers' market share over time. To test this thesis, we are building our own NPS data set. We are starting with a survey of ~2800 households per quarter. We will likely increase the sample size or partner with companies to access much larger data sets as we learn and improve upon the product.

**Explaining the hypothesis:**

- **The most prominent factors that drive consumers' choice of broadband provider tend to be price, speed and network reliability**. We can measure these factors objectively; however, we know there is a gap between objective measures and consumer perception. Perception drives decisions. In addition, we don't know how consumers weigh these and other factors when deciding which broadband provider to pick.
- NPS measures perception rather than objective reality (it measures the thing that actually drives decisions). In addition, NPS implicitly captures the weighting of decision factors by each consumer and across the population in aggregate. We suspect **the change in the NPS score of a carrier relative to their competitors will predict the direction of that carrier's market share over time**.
- To test this thesis, we are building our own NPS data set. **We will measure NPS across broadband and wireless operators quarterly through a survey**. We will need many quarters of data to fully test the hypothesis, but we have to start somewhere, and we will get great insights from the data along the way.
- **We included the NPS survey in a broader survey aimed at understanding the purchasing decisions of households**, and so the insights will extend beyond NPS. Even if we are wrong about the strength of the correlation with market share changes, we know the data set will have value. Every operator tracks NPS, and some track in maniacally at a very granular level. We know that it drives management decisions. If we can build a reasonable proxy for a data set that drives internal decisions, it will give us insights into the likely behavior of companies we track.
- **In our first foray, we are building the NPS dataset ourselves through a survey of ~2800 households per quarter**. We may ultimately partner with companies that have much larger survey pools, that have been tracking the data for years (or decades). We are starting with our own dataset because we believe it is important to the process of building analytical capabilities internally and because we want to start with insights that aren't influenced by the biases of firms that have been looking at this data for years.

Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

## Our Proprietary Broadband Market Share Drivers Survey

We conducted a proprietary consumer survey of 2,830 respondents to gain a better understanding of purchasing decision drivers, churn drivers, and the impact of Net Promoter Score (NPS) and customer satisfaction (CSAT) on market shares trends among broadband providers.

| Survey Format | Key Qualifying Criteria | Target ISPs | Survey Length | Qualified Respondents |
|---|---|---|---|---|
| **Online** | **Adults who make the purchasing decision for their home internet service** | **NSR's core broadband coverage** | **~10-15 minutes** | **2,205** |
| We conducted an **online survey among consumers**, with a two-week collection period and a general audience representative of U.S. demographics | We screened respondents for a few critical criteria, including that they were legal adults (i.e., over 18); that they buy home internet services; and, that they have decision-making power when buying them | We targeted respondents who take broadband from **Comcast, Charter, Altice, Frontier, AT&T or Verizon;** we collected ~250 respondents per provider<br><br>In addition to our core coverage, we collected responses on a best-effort basis from subscribers of **Cox**, **Lumen,** as well as **Verizon** & **T-Mobile**'s **fixed wireless broadband** products | We asked each respondent a total of ~25 questions on the subjects of **broadband provider choice, NPS, customer satisfaction, and churn** and took them ~10 minutes on average to finish it | We obtained **2,205 qualified respondents for broadband** after applying the screening criteria and sample quality control techniques to our total sample of 2830 respondents that completed the survey |

Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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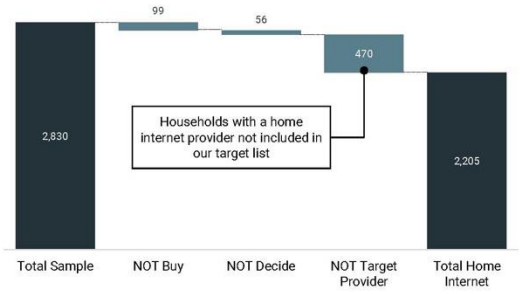
## 2205 qualified respondents completed the first wave of our survey questionnaire

We achieved ~250 qualified responses per provider for Verizon FiOS, AT&T, Comcast, Charter, Cox, and Altice. We had fewer responses for Frontier, Lumen and the two Fixed Wireless products, probably due to their lower market share and/or their more regional footprint.

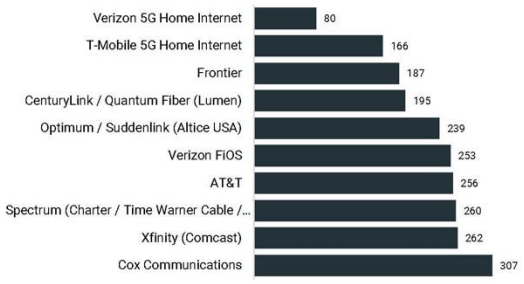
**Fixed Broadband Respondents**

*Number of respondents, N=2830*




**Sample Size by Provider**

*Number of respondents; Providers in our target list only; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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## The Broadband Market Share Drivers report series

The survey produced an avalanche of data that we promptly turned into ~200 slides. This seemed overwhelming, so we decided to split the report into several chapters that we will publish sequentially. To set the stage for the analysis of NPS data, we start by exploring the individual factors that drive household decisions. We are still exploring the data and so reserve the right to change the order of chapters or content within as we go.

1. **Chapter 1: Purchasing Decision Drivers**
2. **Chapter 2: Churn Decision Drivers**
3. **Chapter 3: NPS & Customer Satisfaction**
4. **Chapter 4: Fixed Wireless Broadband Deep Dive**
5. **Chapter 5: Usage & Customer Life-Time Value**

Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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## The survey provided a lot of great insights, with a few caveats

As this is our initial survey, it will inevitably have weaknesses. We list some of the more significant short comings below. We will undoubtedly learn of others as we engage with clients and market participants on the data. This will all go towards improving the survey and the analysis for the next iteration. We would treat this iteration of the data as instructive rather than predictive, and the conclusions as preliminary.

**Survey caveats**

- This is our first wave. **A single instance of the data has limited value**. The most valuable insights will emerge as we collect more data over more quarters
- We set hard quotas of ~250 respondents per provider to get statistically representative samples at the company level with a 90% confidence interval and a 5% margin of error. As a trade off, by forcing the number of respondents per provider, the **sample might not mirror perfectly national preferences** (e.g., preferences of Cox customers will be overweighted vs. Comcast's in consolidated results)
- **Larger samples would provide more value**, especially when it comes to looking at smaller players or smaller sample cuts. For example, churn numbers are different from what we would expect, probably because switchers are already a small proportion of the overall market and their sample in the survey was also low to begin with. So, the conclusions bear further investigation
- Furthermore, **the first iteration of the survey will undoubtedly have issues** that we will clear up in subsequent iterations as we incorporate your feedback and lessons learned in the process

Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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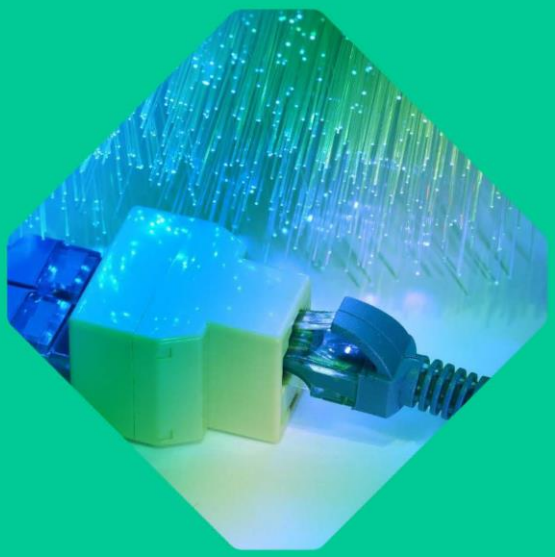

## Key Insights



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## Purchasing Decision Drivers: Key Insights

| | | |
|---|---|---|
| 01 | **Consumers say speed drives their purchasing decisions…** | Close to 20% of consumers indicate that download speed is the most important factor driving their choice of broadband provider, and more than 40% list it among the top three (the top three factors are consistently speed, network reliability, and price). Speed is the second most important factor after price. |
| 02 | **…but a surprising number of consumers don't know what speed they have…** | 41% of respondents say they don't know what download speed they are getting. That strikes us as high, considering the importance ascribed to speed in driving decisions. The share of those that don't know their download speed is quite consistent across providers. 49% of respondents don't know their upload speed. |
| 03 | **…and a surprising number of those who think they know, don't know** | 18% of respondents with FWB claim to receive 500Mbps or more; 33% of Cable respondents claim to receive symmetric upload and download speeds; 21% of Lumen respondents claim they receive 100Mbps or more (~80% of Lumen broadband subs are still on DSL). These are all highly improbable, suggesting many of those that think they know, don't know. |
| 04 | **Most consumers are satisfied with the speed they have today** | 84% of consumers are satisfied with their broadband speed. This will be surprising to many, given the common belief in the primacy of speed and the carrier rush to deliver higher speeds. 74% of respondents on speeds lower than 100Mbs are satisfied and even 55% on speeds lower than 25Mbps are satisfied. |
| 05 | **Speed may not be all that it is cracked up to be** | Speed may be important when consumers are comparing competing offers, but it is less important to their experience once they have made a choice. 95% of consumers have 1Gbps or less, and 84% of them are satisfied with their service. We think this has profound implications for the competitive strategies and capital allocation plans of broadband providers. |

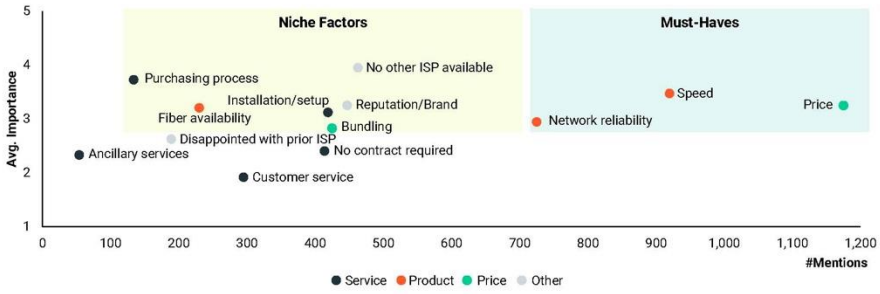
## Insight #1: Consumer say speed drives purchasing decisions (along with price and network reliability)

NewStreet Research

We classified the purchasing factors by importance and number of mentions, and we distinguished between must-haves (high importance and high number of mentions), niche factors (high importance but low number of mentions) and others. Price, speed and network reliability received the highest number of mentions and average importance score. Lack of choice was the most important niche factor (for households with no choice, other factors are meaningless).

**Top Purchasing Factors**

*Average importance (1-5) vs total number of mentions by category; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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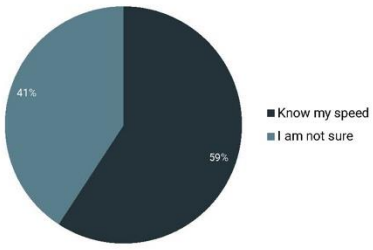
## Insight #2: 41% of respondents are not sure of their home internet speed

NewStreet Research

Given the importance consumers place on speed when making a purchasing decision, we are surprised that more than 40% have no idea what download speed they have purchased. We will show on a later slide that close to 50% have no idea what upload speed they have purchased (slightly less surprising).

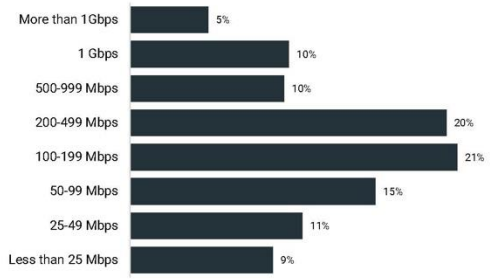
**Download Speed Awareness**

*% of total respondents; N=2205*




**Download Speed Distribution**

*% of respondents that claimed to know their speed; N=1306 (59% of 2205)*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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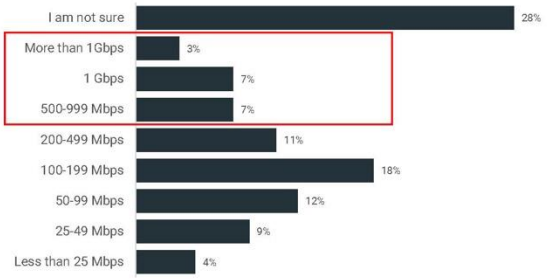
## Insight #3: Many of those who think they know what speed they are purchasing don't

NewStreet Research

18% of respondents with FWB claim to receive 500Mbps or more; 33% of Cable respondents claim to receive symmetric upload and download speeds. These are highly improbable, suggesting many of those that think they know, don't know.

**FWB Download Speed Distribution**

*% of total FWB respondents, N=246*




**Cable Upload Speed Perception**

*% of total Cable respondents, N=1068*


Note: Cable = Comcast, Charter, Altice, and Cox respondents; Telco = AT&T, Verizon FiOS, Frontier and Lumen respondents; FWB = Verizon 5G Home Internet and T-Mobile 5G Home Internet respondents
Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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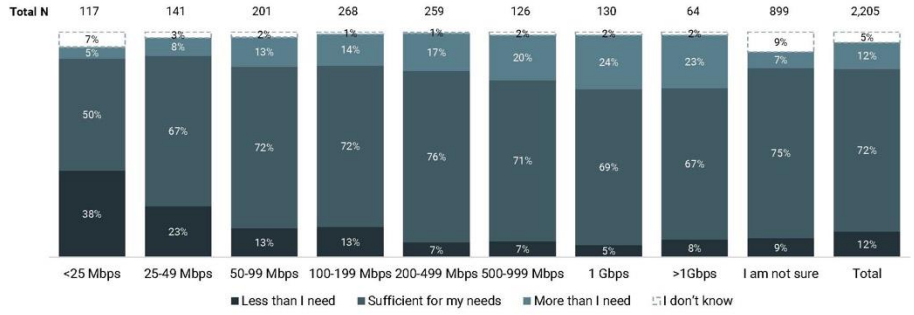
## Insight #4: 84% of households are satisfied with their download speed

NewStreet Research

95% of consumers receive download speeds of 1Gbps or less. 84% of these consumers are satisfied with their speed (consistent with the overall average). Surprisingly, 74% of consumers that receive less than 100Mbps are satisfied. Even more surprisingly, 55% of consumers on less than 25Mbps are satisfied with their current speed.

**Download Speed Needs**

*% of total respondents by speed segment; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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NewStreet Research

## Implications for competition and capital allocation

**01 Cable has a marketing problem, not a speed problem**

We assume Cable keeps 50% share in fiber markets (1); investors worry that they won't, given lower speeds. The survey results suggest that speed impacts purchasing decisions, but above a threshold of 200Mbps it is not important to consumers' experience. This suggests that Cable's product is adequate; they face a marketing challenge. Conversely, fiber has a marketing advantage, but that is weaker than a product advantage.

**02 Capital allocation strategy should be sustainable**

Cable doesn't need to significantly increase capex to close a speed gap. Cable's download speeds are adequate for most households today. They need to improve upload speeds, and they are doing this with the current upgrade (detailed report here; Comcast update here). The companies should be able to continue into a DOCSIS 4.0 upgrade at a measured pace while maintaining capex at around current levels.

**03 Less risk to ARPU**

If Cable is delivering a product that is equal to fiber for all practical purposes, they should not need to price at a discount to hold 50% of the market. Moreover, if consumers view the products as substantially similar, there is no incentive for fiber companies to attempt to push for more than 50% of the market by cutting price themselves (this would undeniably destroy value). The most rational and likely scenario is that both are price disciplined.

**04 Cable needs to change the marketing narrative**

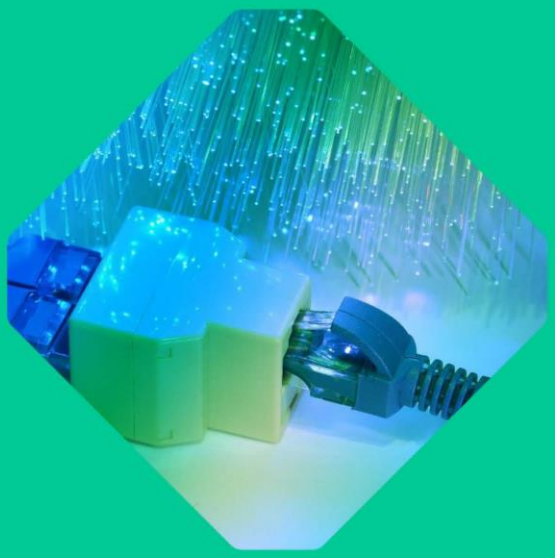
The companies have conditioned consumers to focus on download speeds over the last decade when they had a decisive speed advantage. With speed no longer an advantage, they need to shift the focus of their marketing to the consumer experience more broadly. Here Cable still enjoys an advantage, with a strong pay-tv offering, a compelling mobile product, and the scale to invest in other aspects of the customer experience.

**05 Fiber companies may need to broaden their offering**

If Cable is successful in refocusing consumers on the holistic experience there could be two long-term consequences for fiber companies(2): first, they may need to invest in pay-tv, mobile, and other products and features in time to remain competitive; Second, they may need to consolidate to attain the requisite scale to make these investments.

Notes: (1) We assume FWB captures close to 10% of the national market, with higher share in certain markets. Cable and FWB should split the 90%+ of the market not claimed by FWB.
(2) Fiber companies can capture 50% of the market with a superior broadband offering today; however, this could change longer-term if Cable is successful in refocusing consumers.

13



## Purchasing Decision Drivers

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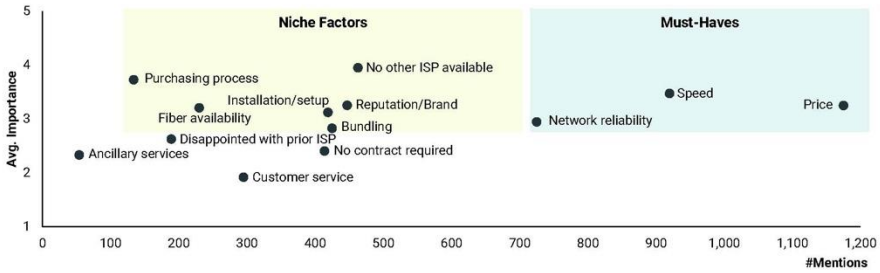
## Price, speed, and network reliability are must-haves for consumers

NewStreet Research

We grouped factors by importance and number of mentions, and we distinguished between "must-haves" (high importance and high number of mentions), "niche factors" (high importance & high number of mentions) and others. Price, speed and network reliability received the highest number of mentions and the highest average importance score. Lack of choice was the most important niche factor (for households with no choice, other factors are meaningless).

**Top Purchasing Factors**

*Average importance (1-5) vs total number of mentions by category; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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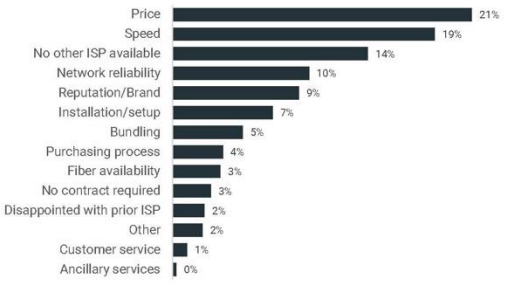
## Price is the most important purchasing factor for respondents

NewStreet Research

Respondents selected the top 3 factors that drive their decision when choosing an ISP. Price is the single most important factor, with 21% of respondents listing it as the most important factor and 53% listing it in their top 3. Speed follows closely behind price. Interestingly, 14% of respondents listed having no alternative as the top factor (for these consumers all other factors are moot). More respondents listed network reliability among the top three factors (availability is either the only factor or not a factor).

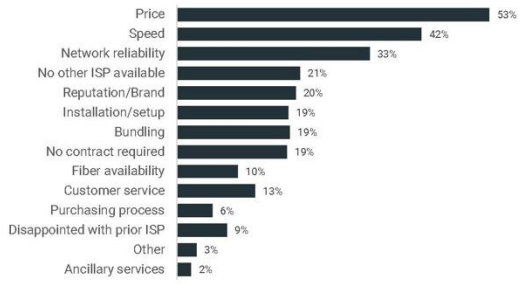
**Top-1 Purchasing Factors**

*% of respondents that mentioned each factor as most important; N=2205*




**Top-3 Purchasing Factors**

*% of respondents that mentioned each factor within top-3; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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## Aggregating factors by category, product factors are collectively more important than price

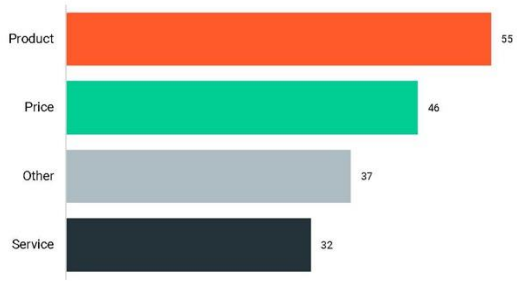
When we combine a factor's importance with the number of times it was mentioned and normalized the score, price is the single most important purchasing criteria followed by speed and network reliability. Speed and reliability may be hard for consumers to distinguish though; we may be dividing votes between two factors that describe the same issue. When factors are grouped by category (price, product, service and others), product factors supplant price as the most important driver of decisions.

**Purchasing Factors - Normalized Score**

*Overall score combining importance and #mentions, normalized 1-100*


**Top-3 Purchasing Factors by Category**

*Overall score by category, normalized 1-100*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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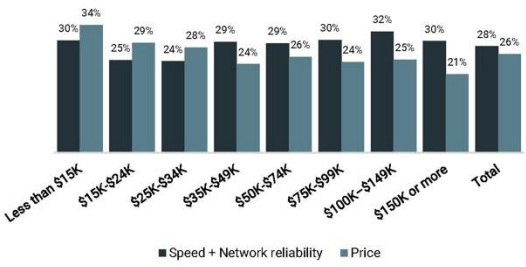
## Top purchasing criteria varies by income level and age

If we group speed & network reliability into one single factor and compare it to price at different income levels and ages, lower-income respondents selected price as the most important criteria, while higher income participants prioritized speed and network reliability over price. Furthermore, price becomes a priority for respondents 45 years old and over relative to younger respondents, who consider speed and network reliability the main drivers of their purchasing decisions.

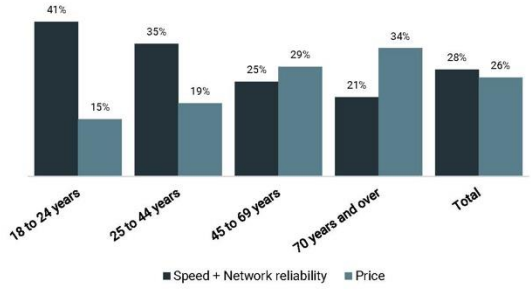
**Top Purchasing Factor by Income Level**

*% of total respondents that chose price or product in first place; N=2205*




**Top Purchasing Factor by Age**

*% of total respondents that chose price or product in first place; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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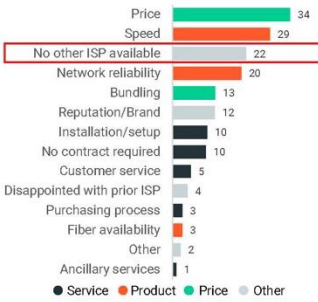
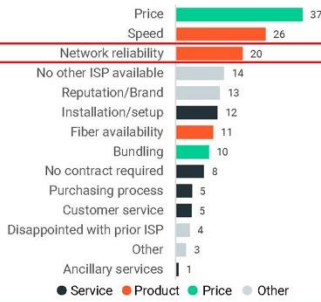
## Purchasing drivers also vary by provider type

Subscribers of Cable and Telco companies value price and speed similarly. The lack of alternatives is the next biggest driver for Cable, while network reliability is a bigger driver for Telcos. FWB subscribers claim to value speed over price. If correct, it is an important insight: it suggests households are picking FWB because they think it is a better product rather than because of price. FWB also wins on ease of set-up. Finally, brand is more important for FWB subscribers and network reliability is less important.

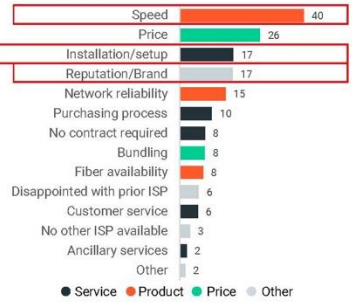
**Cable Purchasing Factors - Normalized Score**
*Overall score combining importance and #mentions, normalized 1-100; Cable companies*; N=1068*




**Telco Purchasing Factors - Normalized Score**
*Overall score combining importance and #mentions, normalized 1-100; Telco companies*; N=891*




**FWB Purchasing Factors - Normalized Score**
*Overall score combining importance and #mentions, normalized 1-100, FWB products*; N=246*




Note: (*) Cable = Comcast, Charter, Altice, and Cox respondents; Telco = AT&T, Verizon FiOS, Frontier and Lumen respondents; FWB = Verizon 5G Home Internet and T-Mobile 5G Home Internet respondents
Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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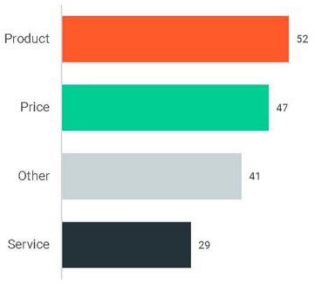
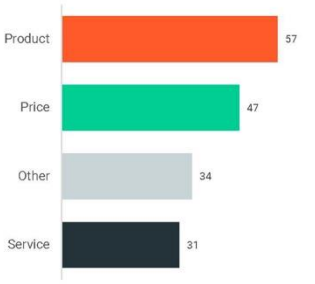
## Product factors are also collectively more important than price across technologies…

When factors are grouped by category, product factors supplant price as the most important driver of the purchasing decision across every operator type. FWB respondents even prefer service factors over price.

**Cable Top-3 Purchasing Factors by Category**
*Overall score by category, normalized 1-100; Cable companies*




**Telco Top-3 Purchasing Factors by Category**
*Overall score by category, normalized 1-100; Telco companies*




**FWB Top-3 Purchasing Factors by Category**
*Overall score by category, normalized 1-100; FWB companies*


Note: Cable = Comcast, Charter, Altice, and Cox respondents; Telco = AT&T, Verizon FiOS, Frontier and Lumen respondents; FWB = Verizon 5G Home Internet and T-Mobile 5G Home Internet respondents
Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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## ...and across all the providers targeted, except Lumen and Altice

NewStreet Research

Product factors are the most important criteria across providers as well, except for Lumen and Altice respondents, who listed price and other factors as most important. Lumen still competes predominantly with DSL, so it is not surprising that customers than pick Lumen do so because its cheap. The result is more surprising for Altice. It lends weight to our concern that they will have a hard time maintaining an above-market ARPU.

**Purchasing Factors by Category & Provider**

*Overall score by category, normalized 1-100*

| | Comcast Xfinity | Charter Spectrum | altice | LUMEN | AT&T | verizon | COX | 5G | T-Mobile 5G Home Internet | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| **Product** | 56 | 54 | 41 | 54 | 40 | 58 | 71 | 54 | 68 | 61 | 55 |
| **Price** | 52 | 49 | 46 | 41 | 49 | 50 | 47 | 42 | 29 | 37 | 46 |
| **Other** | 37 | 35 | 47 | 42 | 43 | 30 | 27 | 44 | 24 | 31 | 37 |
| **Service** | 25 | 33 | 30 | 25 | 31 | 37 | 31 | 29 | 48 | 43 | 32 |

Top 1 Category

Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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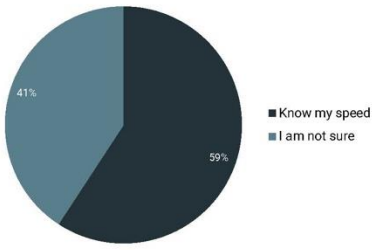
## Despite being a must-have, 41% of respondents are not sure of their home internet download speed

NewStreet Research

This was a surprising result, given the importance consumers say they ascribe to speed (though, when we polled the team more than half didn't know what speed they subscribed to). Among those that claim they know their download speed, 15% list speeds of 1Gbps or more, 56% list speeds below 200Mbps (where speed seems to matter more), and 9% claim less than 25Mbps.

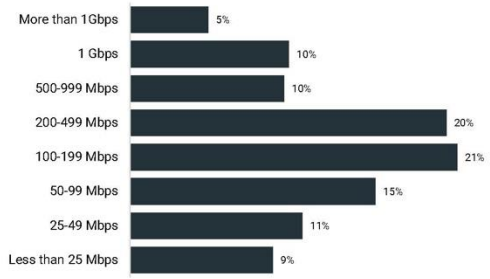
**Download Speed Awareness**

*% of total respondents; N=2205*




**Download Speed Distribution**

*% of respondents that claimed to know their speed; N=1306 (59% of 2205)*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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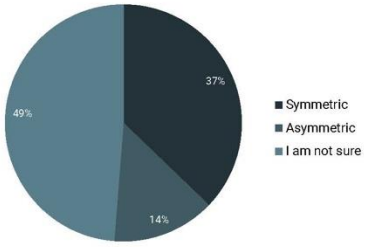
## Close to 50% of households don't know their upload speed

40% of consumers recognize that upload speeds are at least as important as download speeds. This is an area where Cable is at a disadvantage at present, though they are investing to correct it (report here). 60% think upload speeds are less important or they aren't sure. Of those who say they know their upload speed, ~75% claim to have symmetric speeds. This simply isn't true; 33% of respondents who are cable customers believe they have symmetric speeds when they don't.

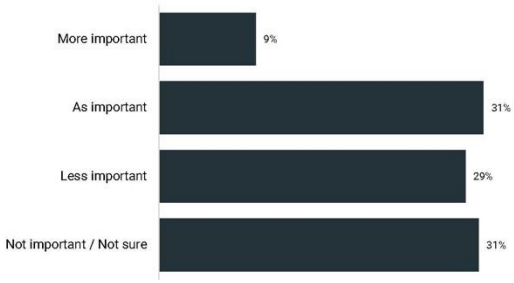
**Upload Speed Awareness**

*% of total respondents; N=2205*




**Upload Speed Perception**

*Importance of upload vs. download speed, % of total respondents; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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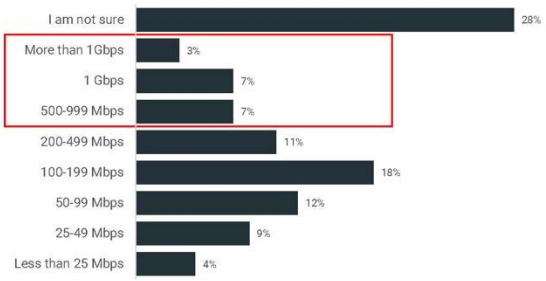
## Many of those who think they know what speed they are purchasing don't

18% of respondents with FWB claim to receive 500Mbps or more. This is improbable; some FWB subs may have seen occasional bursts up to 500Mbps, but it is far from the average experience. Verizon's UWB product may deliver speeds of 500Mbps and even 1Gbps, but there is no way that anything close to 18% of FWB are on Verizon's UWB product. As mentioned before, 33% of Cable respondents claim to receive symmetric upload and download speeds, which is implausible.

**FWB Download Speed Distribution**

*% of total FWB respondents, N=246*




**Cable Upload Speed Perception**

*% of total Cable respondents, N=1068*


Note: Cable = Comcast, Charter, Altice, and Cox respondents; Telco = AT&T, Verizon FIOS, Frontier and Lumen respondents; FWB = Verizon 5G Home Internet and T-Mobile 5G Home Internet respondents
Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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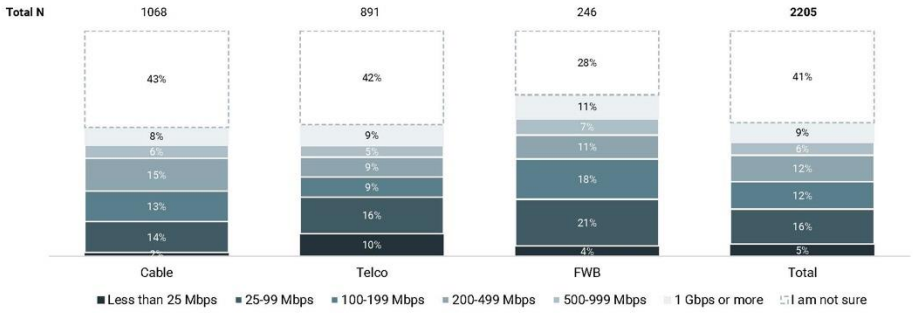
## FWB customers seem more certain of their speeds than terrestrial providers (though many are wrong)

NewStreet Research

28% of FWB subscribers are unsure about their speed compared to 42-43% for others. Interestingly, a significant number of FWB subscribers are wrong about the speed they get (18% seem to think they are getting 500Mbps of more, which is implausible). Verizon can deliver 500Mbps+ over millimeter wave spectrum (UWB), but subscribers on UWB will be a small portion of their base and a very small portion of FWB overall.

**Download Speed by Provider Type**

*% of total respondents by provider type; N=2205*

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Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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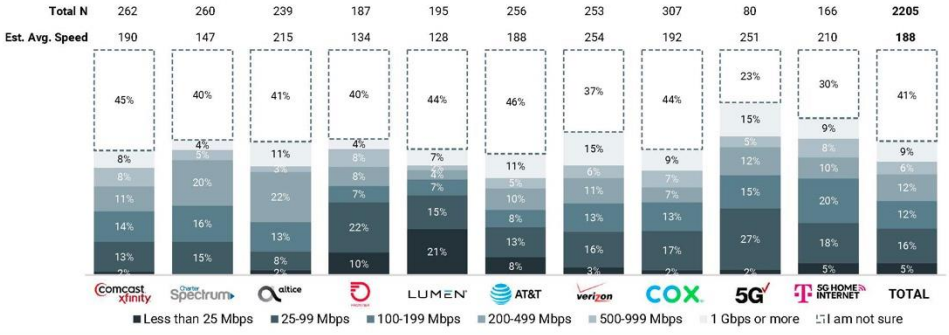
## Uncertainty around download speeds is relatively consistent among terrestrial providers

NewStreet Research

40-45% of the customers of cable, fiber, and DSL providers are unsure of their download speeds. Verizon FiOS is the outlier here at 37%. They are our best proxy for a fiber provider (we can't distinguish between DSL and fiber, based on our current survey). Verizon also has more FWB that claim to know their speeds (though they also have more FWB who are just wrong about what they claim to know). Perhaps Verizon marketing of speed has landed differently.

**Download Speed by Provider**

*% of total respondents by provider; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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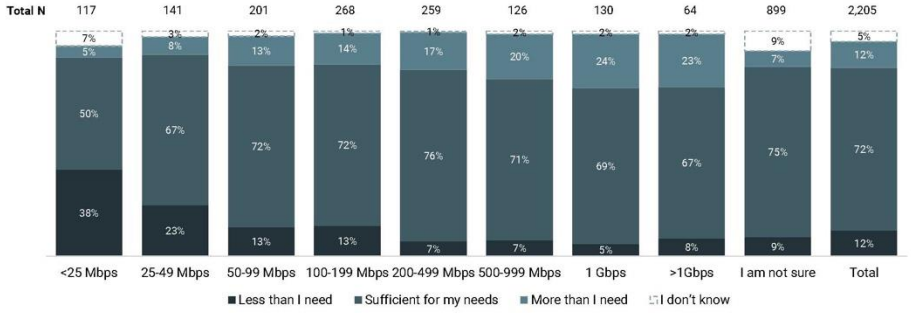
## Surprisingly, only 12% of households are dissatisfied with their download speed

NewStreet Research

Consumers receiving 200Mbps or more appear to have very similar levels of satisfaction (7%). There is a step-function change in satisfaction around 200Mbps where dissatisfaction almost doubles. There is another step-function change at each of 50Mbps and 25Mbps. While dissatisfaction is much higher among consumers receiving less than 25Mbps, we were surprised that it is only 38%. More than half of respondents with a product that we no longer consider "broadband" seem to be happy with it.

**Download Speed Needs**

*% of total respondents by speed segment; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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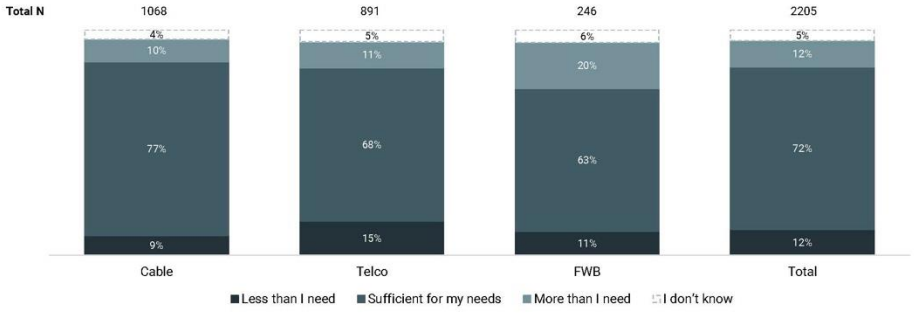
## More Telco (Fiber or DSL) customers are dissatisfied with their speeds than Cable or FWB customers

NewStreet Research

We can't distinguish between fiber and DSL in these results. We suspect the result is very different between fiber and DSL, though we will show on the next slide Verizon's levels of dissatisfaction are only slightly below the average (and their broadband base is predominantly fiber). Dissatisfaction among FWB subscribers is right around the average, though FWB has a greater share of "evangelists" than others[1].

**Download Speed Needs by Provider Type[2]**

*% of total respondents by provider type; N=2205*




Notes: 1) We suspect that these are mostly our clients that are short Cable stocks who always seem unreasonably enthusiastic about their FWB service (mostly tongue in cheek). 2) Cable = Comcast, Charter, Altice, and Cox respondents; Telco = AT&T, Verizon FIOS, Frontier and Lumen respondents; FWB = Verizon 5G Home Internet and T-Mobile 5G Home Internet respondents
Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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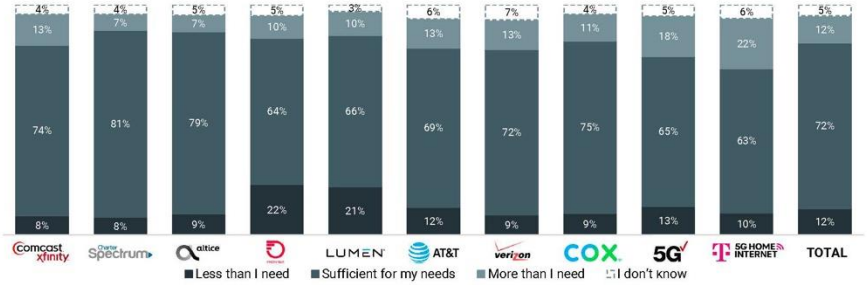
## Frontier and Lumen subs are less satisfied with their speed compared to other providers…

More than 20% of Frontier and Lumen respondents claim that their current speed doesn't satisfy their needs, which is double the dissatisfaction rate for the other providers. Again, this is almost certainly skewed by the large proportion of their consumer broadband subs still on DSL (45% for Frontier; 80% for Lumen). Also, Verizon's levels of dissatisfaction are only slightly below the average despite a broadband base predominantly with fiber.

**Download Speed Needs by Provider**

*% of total respondents by operator; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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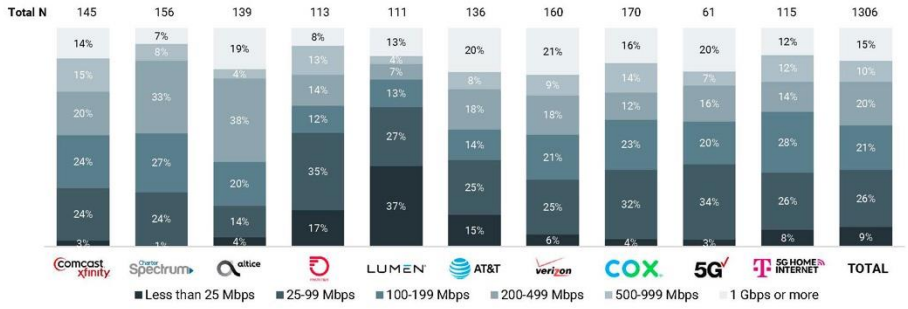
## …driven by the higher portion of subs on speeds below 200Mbps

Among respondents that claim to know their speeds, 77% of Lumen's and 64% of Frontier's receive less than 200Mbps. Lumen has by far the highest portion of subs receiving less than 25Mbps. We strongly suspect the low speeds are driving higher rates of dissatisfaction. This should improve as the companies deploy more fiber, as it should for AT&T. On the other hand, Verizon, AT&T, and Altice have the largest proportion of respondents with speeds of 1Gbps or greater.

**Download Speed by Provider**

*% of total respondents that claim to know their download speed; N=1306*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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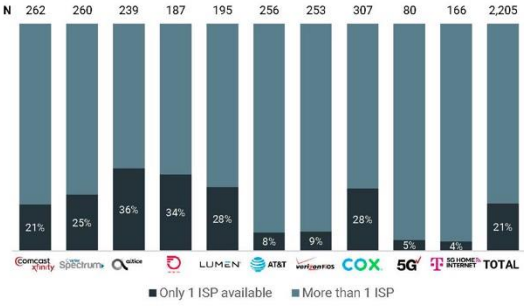
## 21% of respondents said they didn't have a choice of ISP

27% of Cable subscribers claim to have no choice, compared for 18% of Telco subscribers, and 4% of FWB subscribers. Altice and Frontier are the ISPs with the highest distribution of subs in 1-player markets. Geographically, RI (80%), NH (60%) and WY (50%) are the states with highest proportion of respondents with only one ISP available.

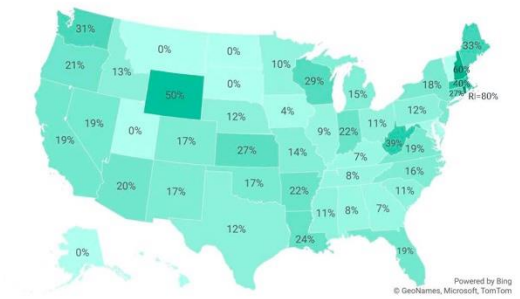
**Respondents with Only One ISP by Provider**

*% of respondents with no other ISP available by provider*




**Respondents with Only One ISP by Region**

*% of respondents within each State with no other ISP available*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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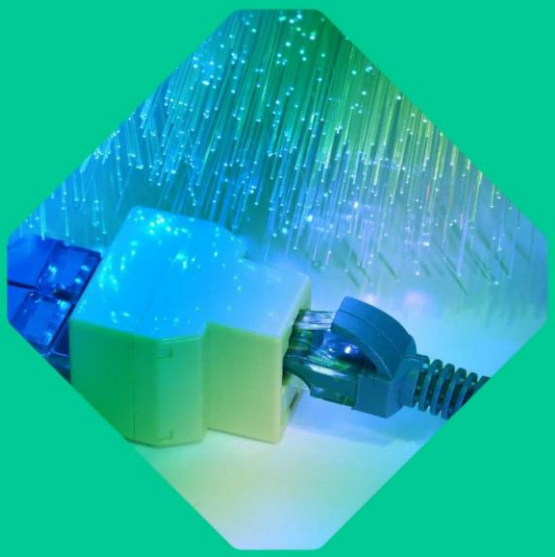
## Next Chapter of Our Broadband Market Share Drivers Report Series

1. Purchasing Decision Drivers
2. **Churn Decision Drivers**
3. NPS & Customer Satisfaction
4. Fixed Wireless Deep Dive
5. Usage & Customer Lifetime Value



# Appendix



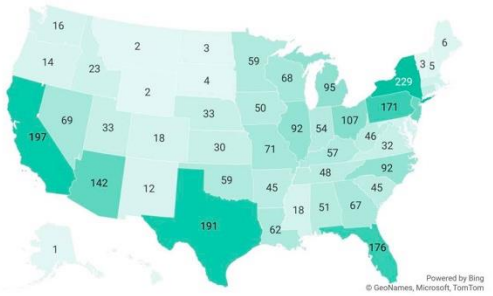
## Sample Overview – Regional Distribution

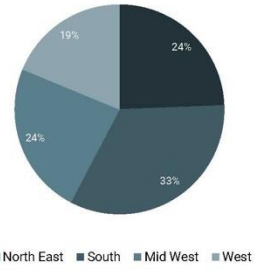
NewStreet Research

Respondents are distributed across all States, being NY, CA and TX the states with more representation.

**Respondents by Geography**

*Number of respondents by state and by region, N=2830*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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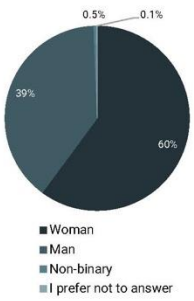
## Sample Overview – Demographics (1/2)

Our sample is slightly skewed to female gender. We will adjust the sample in our next wave so that the gender share is closer to 50%.

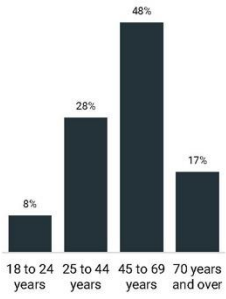
**Gender**

*% of respondents; N=2830*



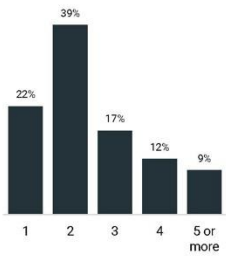

**Age**

*% of respondents; N=2830*



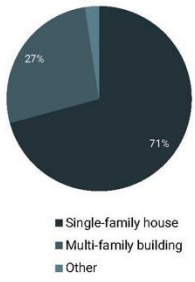

**Household Size**

*% of respondents; N=2830*




**Household Type**

*% of respondents; N=2830*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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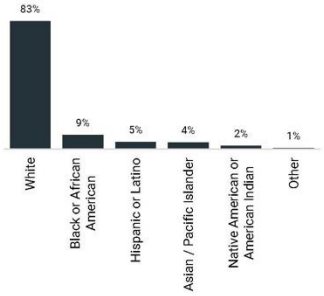
## Sample Overview - Demographics (2/2)

Our sample had only 5% Hispanic or Latino share. We will adjust the sample in our next wave so that the Hispanic share of households is closer to reality nowadays (~20%).

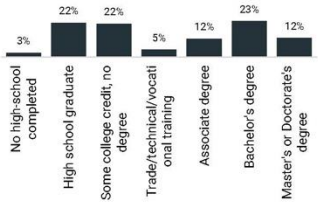
**Ethnicity**

*% of respondents, N=2830*



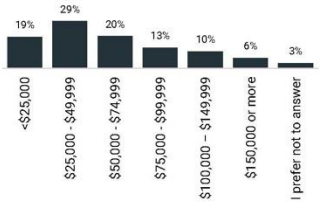

**Education**

*% of respondents, N=2830*




**Household Income**

*% of respondents, N=2830*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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## ~60% of subs have been 3+ years with their current provider

NewStreet Research

T-Mobile and Verizon FWB products are newer and therefore have a less-tenured customer base. AT&T, Cox and Altice have the more tenured customer base.

**Tenure by Provider**

*% of total respondents by provider; N=2205*


Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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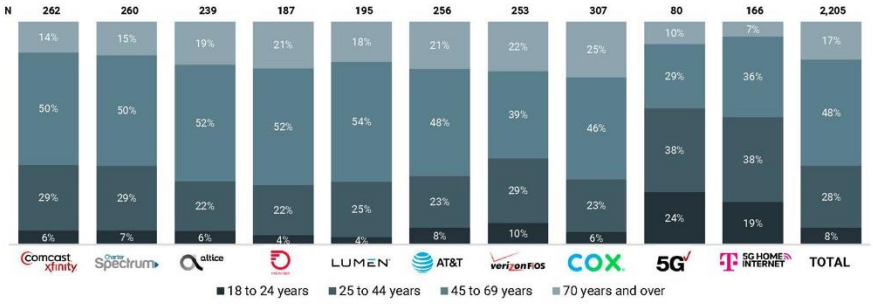
## Median broadband subscriber age is around 45-69 years old

NewStreet Research

Verizon and T-Mobile's FWB products have a younger customer base than the rest, with ~60% of respondents being less than 45 years old; Frontier, Altice and Cox have the largest proportion of customers older than 45.

**Age by Provider**

*% of total respondents by provider; N=2205*




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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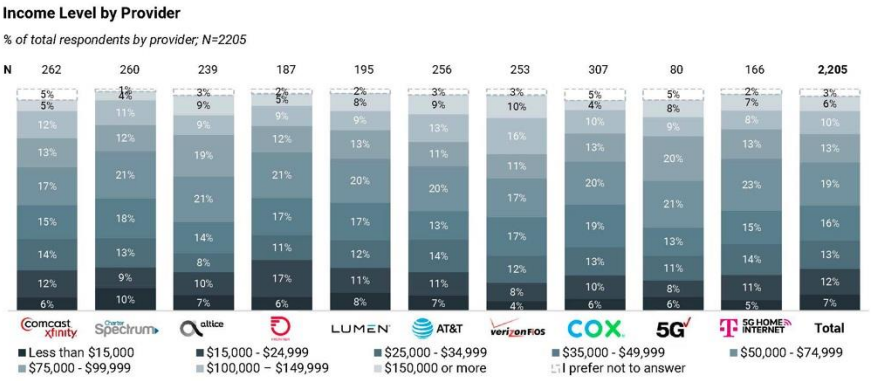
## Income Level by Provider

Verizon FiOS has the largest contribution of high-income households among respondents, while Frontier has the largest population of low-income households.




Source: New Street Research Proprietary Broadband NPS Survey 2Q22; New Street Research analysis

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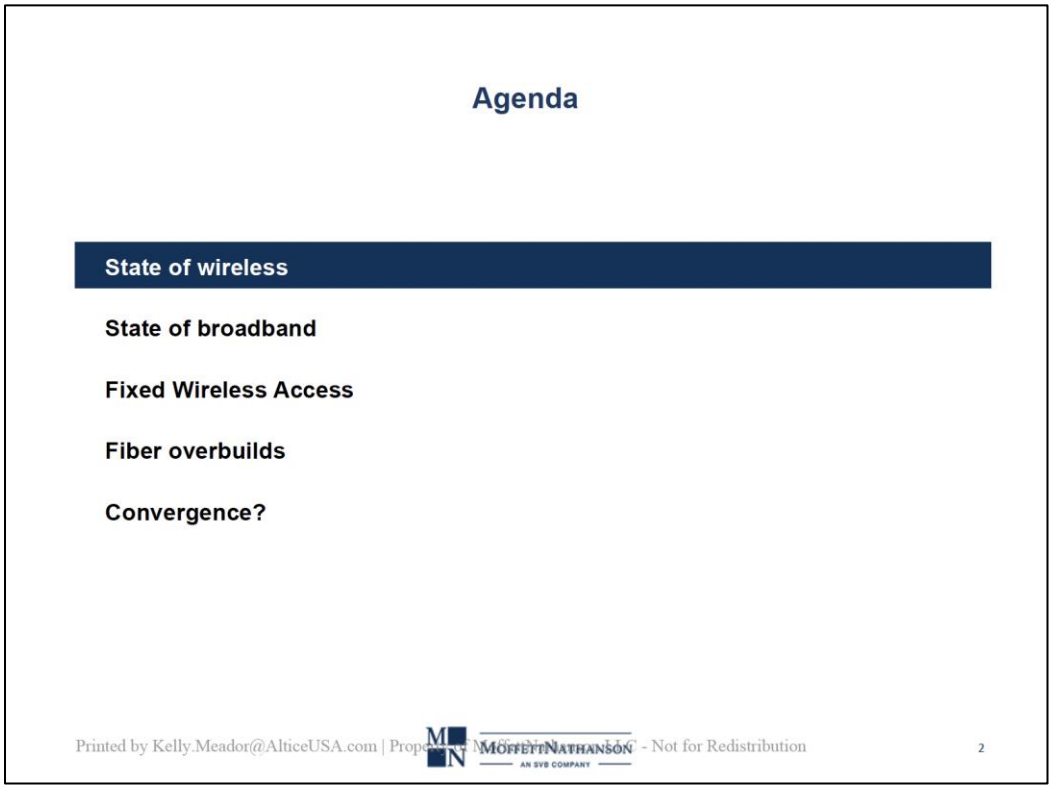
Presentation: *U.S. Telecom and U.S. Cable and Satellite*

## The Haves and the Have-Nots Diverge (I)

| Five Forces |
| --- |
| 1) T-Mobile has a growing advantage in 5G |
| 2) Industry phone growth is slowing |
| 3) Cable Wireless continues to gain momentum |
| 4) Incremental 5G revenue sources have failed to materialize |
| 5) Business wireline segment for incumbents has gotten worse (and worse) |



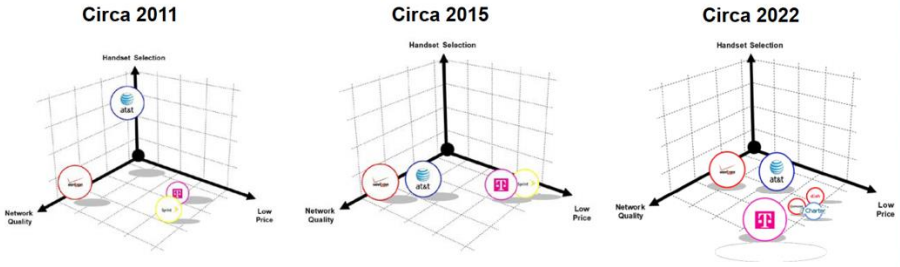


## The Haves and the Have-Nots Diverge (II)

| Portfolio Implications |
| --- |
| Against this backdrop, Verizon has struggled to compete, optimizing for neither financial discipline nor market share. We are significantly below consensus for net additions, service revenue growth, EBITDA, and EPS. |
| AT&T has struggled as well, choosing market share at the cost of lower cash flows. We are modestly below consensus for EBITDA, and below consensus for EPS. |
| T-Mobile continues to gain momentum. We are modestly above consensus for service revenue, EBITDA, and EPS. |

## What were once three dimensions of competition have collapsed to just two. T-Mobile now has both best network *and* lowest price

### Competitive Positioning




Source: MoffettNathanson estimates and analysis





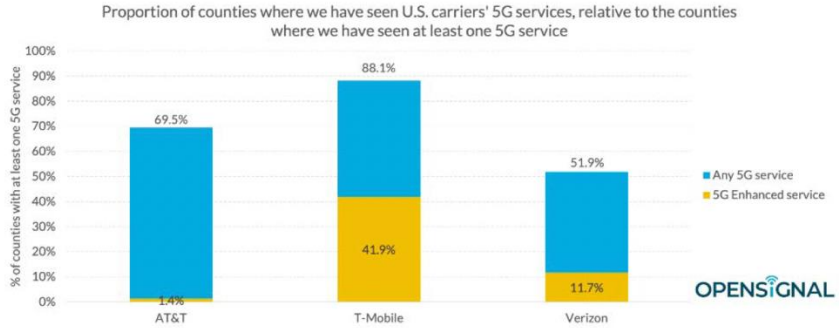
## T-Mobile is pulling ahead, and not just winning on network speed…

### OpenSignal July 2022 Mobile Network Experience Report: Download And Upload Speed


Source: OpenSignal

## …but also network coverage (note that Verizon's and AT&T's coverage is overwhelmingly low-band, shown in blue)…

**5G Coverage: By Counties Covered**



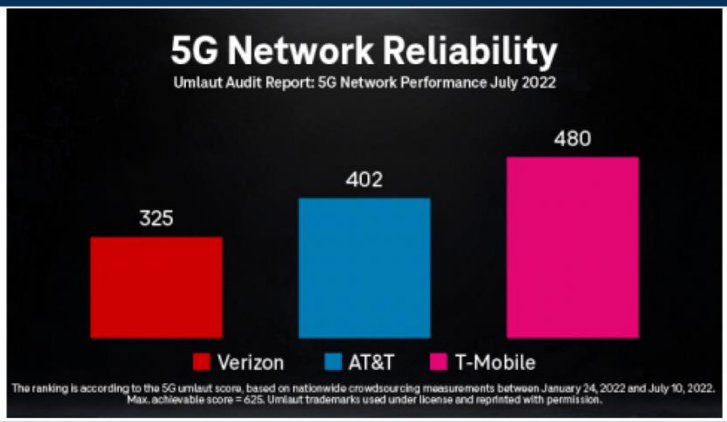

Source: OpenSignal





## …and network reliability

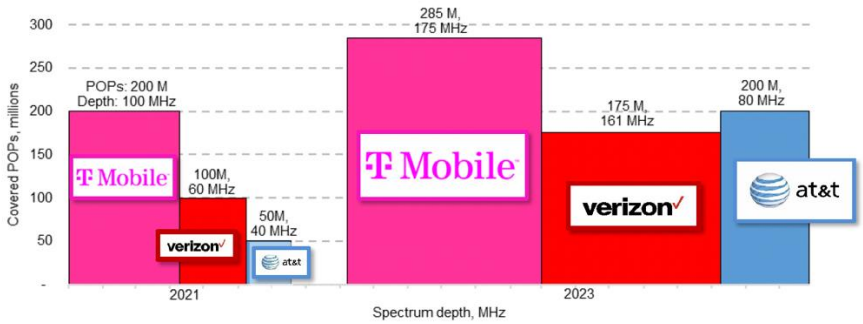
**Umlaut July 2022: 5G Network Reliability**




Source: Umlaut

## …and that gap will sustain over the coming years

**T-Mobile, Verizon, and AT&T: Mid-Band 5G Build-out Milestones**



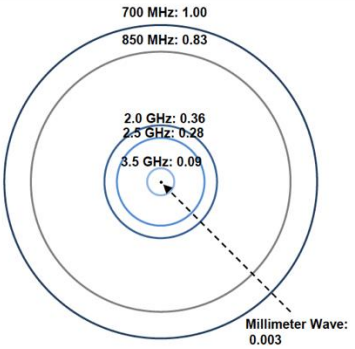

Source: Company reports, MoffettNathanson estimates and analysis





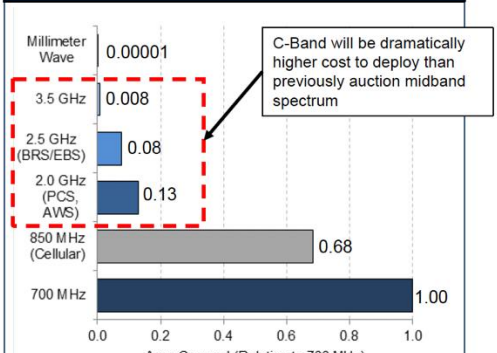
## Free space propagation for C-Band is significantly lower than T-Mobile's 2.5 GHz (I)

**Propagation Distance in Open Space**




Source: Samsung, Verizon investor presentation, MoffettNathanson estimates and analysis

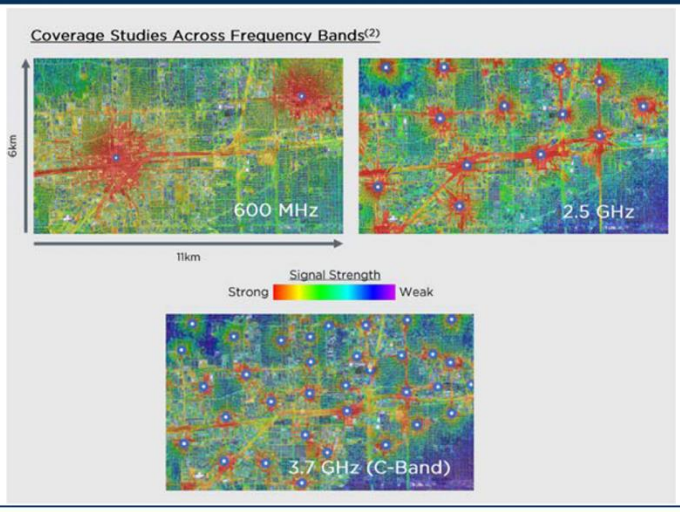
**Area Covered by Signals at Various Frequencies**




Source: Samsung, Verizon investor presentation, MoffettNathanson estimates and analysis

## Free space propagation for C-Band is significantly lower than T-Mobile's 2.5 GHz (II)

### Crown Castle: Real-World Propagation Analysis



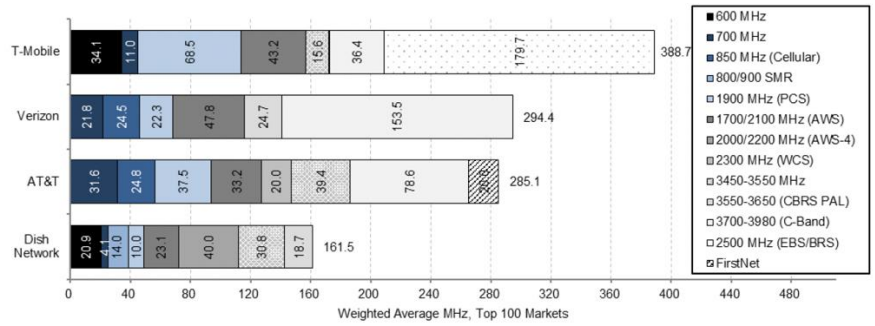

Source: Crown Castle





## T-Mobile widening their advantage in spectrum depth

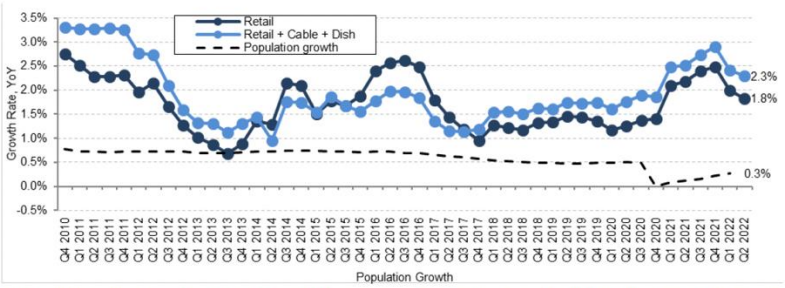
### Low- and Mid-Band Spectrum Holdings




Source: FCC, Company reports, MoffettNathanson estimates and analysis

## Industry phone growth is showing signs of decelerating after years of super-normal growth

**U.S. Total Phone Growth and Population Growth Rate, Network Shutdown Adjustments As Net Losses**




Note: Includes 3G legacy network shutdown-related disconnects at AT&T and T-Mobile and Verizon's Tracfone unit. Verizon will go through its legacy network shutdown later this year.

Source: Company reports, MoffettNathanson estimates and analysis



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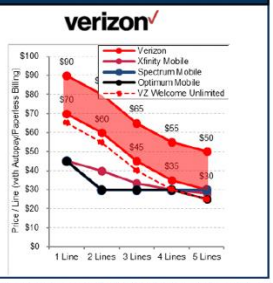
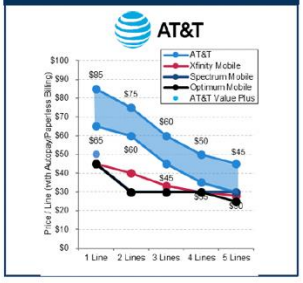
## Cable's pricing is much lower than even the lowest-priced options at Verizon or AT&T

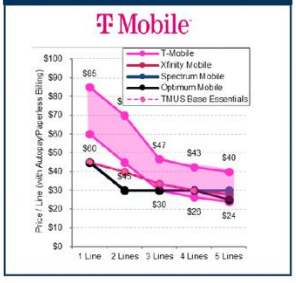
**Price Per Line: Verizon and Cable Unlimited Plans**




**Price Per Line: AT&T and Cable Unlimited Plans**




**Price Per Line: T-Mobile and Cable Unlimited Plans**




Source: Company reports, MoffettNathanson estimates and analysis



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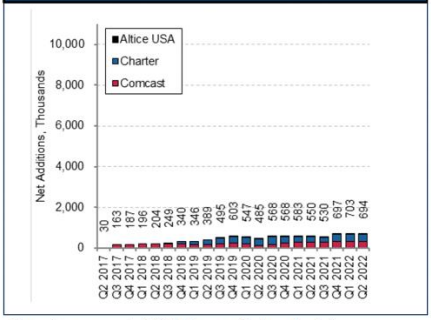
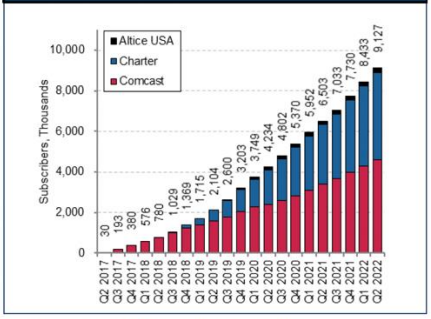
## Against a decelerating industry, Cable Wireless now has over 9M subscribers...

### Cable Industry: Wireless Net Adds




Source: Company reports, MoffettNathanson estimates and analysis

### Cable Industry: Wireless Subscribers



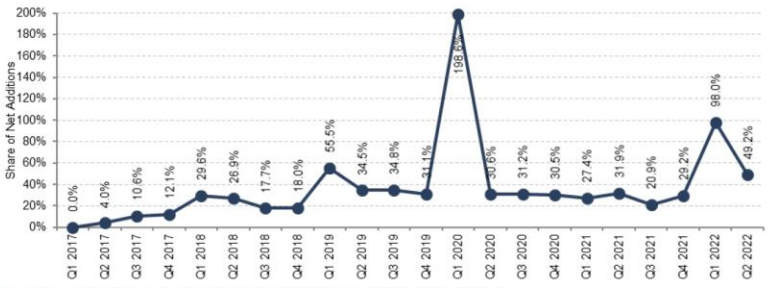

Source: Company reports, MoffettNathanson estimates and analysis





## ...taking disproportionate share of total phone net adds...

### Cable's Wireless Share Of Industry Net Adds, Network Shutdown Adjustments As Net Losses

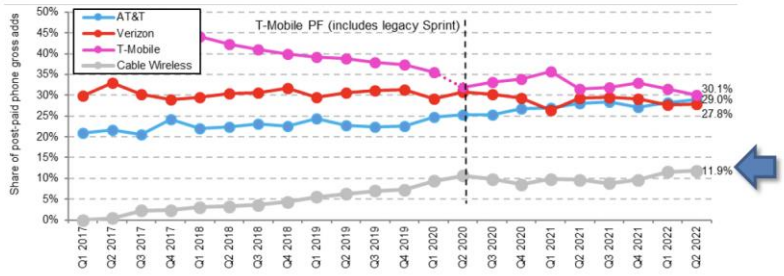



Note: Includes 3G legacy network shutdown-related disconnects at AT&T and T-Mobile and Verizon's Tracfone unit.

Source: Company reports, MoffettNathanson estimates and analysis

## …and recording their highest share of postpaid phone gross additions this quarter

**Share of Post-Paid Phone Gross Additions**



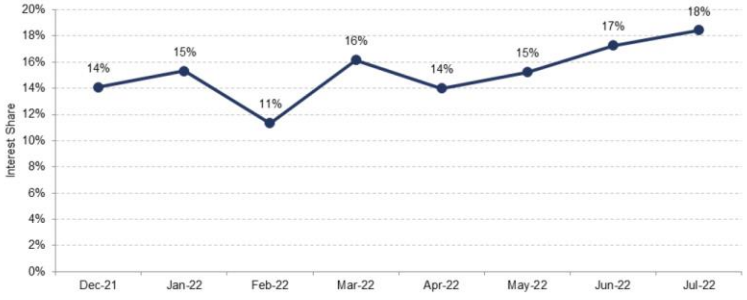

Source: Company reports, MoffettNathanson estimates and analysis





## Consumer interest in Cable Wireless offerings is still growing

**Navi "Find A Plan" Users: Interest Share Of Xfinity Mobile and Spectrum Mobile (Lack Plan Clicked By User)**




Source: Navi

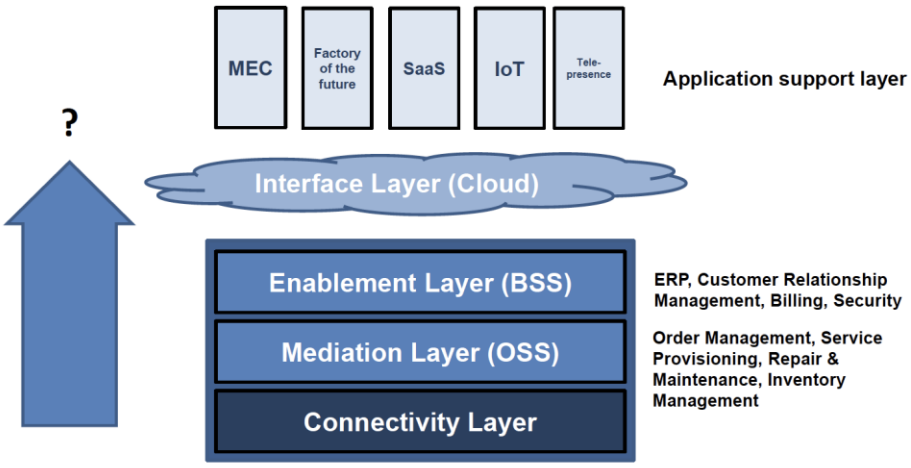
## New 5G revenue streams have not materialized; fixed wireless broadband has been something of a near-term consolation prize

| 5G Use Cases |
| --- |
| Mobile Edge Compute (MEC) remains relatively intangible, and is likely to be fiercely competitive (hyper-scalers/cloud services, and even tower operators, likely better positioned) |
| IoT similarly has not demonstrated material revenue upside potential for carriers |
| Private networks may not include carriers at all; and when they do, it is unclear that carriers will achieve attractive revenue splits with the (many) other participants in the value chain (systems integrators, software providers, hardware providers, security providers, hyper-scalers). |
| Fixed wireless access has emerged as a "consolation prize," with incremental revenue but at very low revenue/bit, potentially significantly taxing network resources in a way other 5G applications do not. |





## Incumbents *always* believe the answer is to "move up the stack"… but they face much better-equipped competitors (Amazon, MS, etc.)



## The incumbents' business wireline segments face powerful secular headwinds; performance has sharply deteriorated

**Commercial Wireline End Market Revenue Growth, YoY ex-USF and AT&T IP sales, Q1 2008 to Q2 2022**


Source: Company reports, MoffettNathanson estimates and analysis

**Business wireline accounts for 19% and 11% of revenue at T and VZ, respectively**



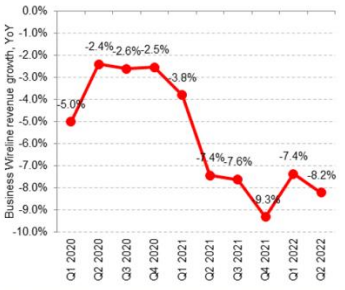


## Share loss at AT&T and Verizon compounds industry-wide deflationary pressure in Business Wireline

**AT&T Business Wireline Revenue Growth, Ex. USF And IP Sales**


Source: Company reports, MoffettNathanson estimates and analysis

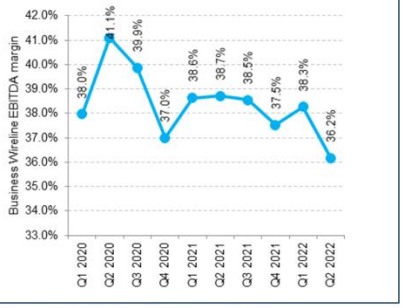
**Verizon Business Wireline Revenue Growth, Ex. USF**




Source: Company reports, MoffettNathanson estimates and analysis

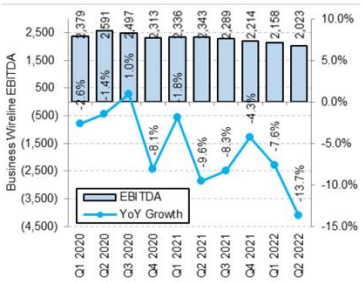
## Negative operating leverage has made Business Wireline EBITDA results worse still

### AT&T Business Wireline Margins




Source: Company reports, MoffettNathanson estimates and analysis

### AT&T Business Wireline EBITDA and EBITDA Growth Rate



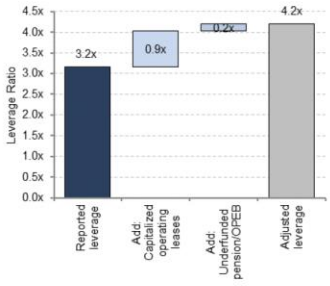

Source: Company reports, MoffettNathanson estimates and analysis





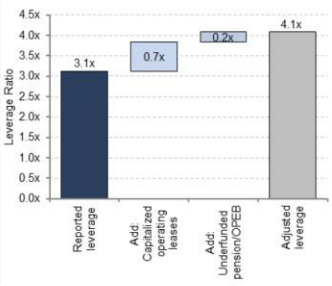
## Without new avenues of growth and a struggling core, AT&T and Verizon remain over-levered

### AT&T: Adjusted Leverage (including underfunded pension and capitalized leases)




Source: Company reports, MoffettNathanson estimates and analysis

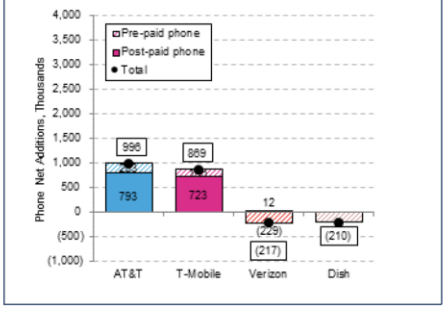
### Verizon: Adjusted Leverage (including underfunded pension and capitalized leases)




Source: Company reports, MoffettNathanson estimates and analysis

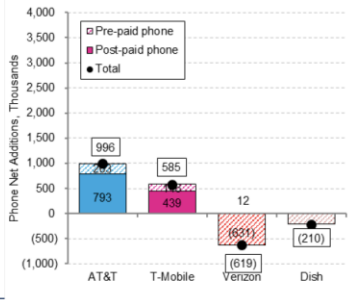
## AT&T's promotional stance has resulted in subscriber growth but disappointing free cash flow results… Verizon now the industry's largest subscriber donor

### Big Three + Dish Total Branded Phone Net Additions: Q2 2022




Source: Company reports, MoffettNathanson estimates and analysis

### Big Three + Dish Total Branded Phone Net Additions: Q2 2022 (3G Shutdown Adjustments As Losses)




Source: Company reports, MoffettNathanson estimates and analysis





## Verizon has struggled to respond to AT&T's promotionality, swinging between meeting the market and maintaining fiscal rectitude

### Big Three: Accounting-Adjusted Post-Paid ARPU Growth by Company


Source: Company reports, MoffettNathanson estimates and analysis

## Verizon's anemic unit growth and negative ARPU growth has resulted in weak overall service revenue growth

**Big Three: Service Revenue Growth by Company (Adjusted for ASC 606 Impacts, Estimated Sprint Lifeline Impacts, and Tracfone Acquisition)**


Source: Company reports, MoffettNathanson estimates and analysis

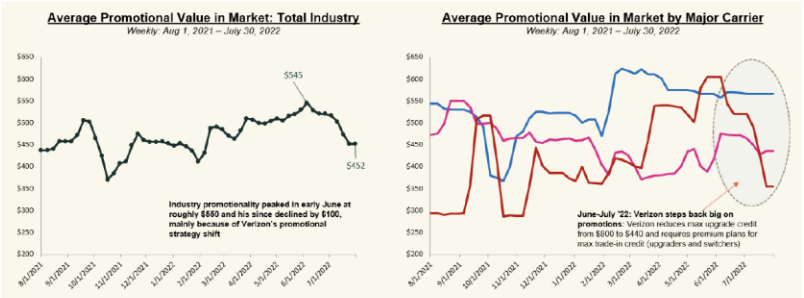
**Absent their wholesale contract with Cable, Verizon's service revenue growth would likely have been negative**





## Faced with high debt and dividend commitments, Verizon sharply pulled back on their promotionality in June…

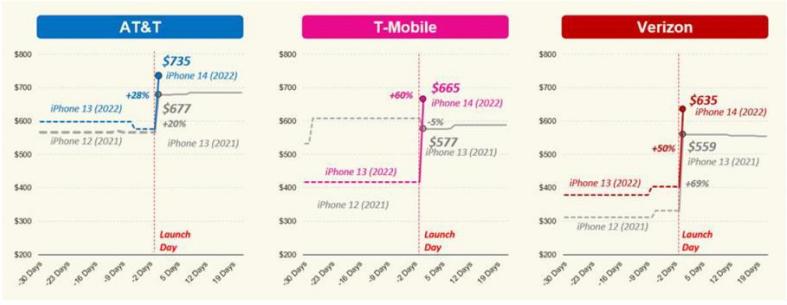
**Navi Wireless Industry Promotionality Index**




Source: Navi

## …but the whole market has moved to an increasingly competitive stance with the release of the iPhone 14

### Navi: iPhone 14 Promotionality



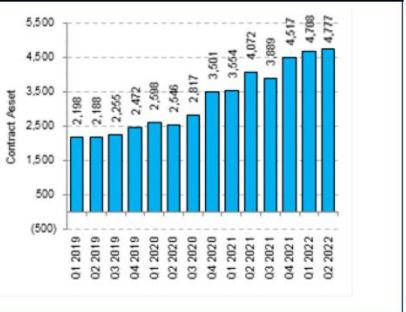

Source: Navi





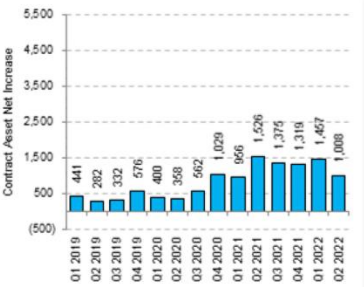
## The backdrop is also challenging for AT&T. Their promotionality has bought them unit growth but a growing pile of "contract assets" stashed on the balance sheet

### AT&T: Contract Assets




Source: Company reports, MoffettNathanson estimates and analysis

### AT&T: YoY Change in Contract Assets




Source: Company reports, MoffettNathanson estimates and analysis

## Summary and Conclusions

**No Easy Answers**

***There are no easy answers for "incumbents" AT&T and Verizon. Their prices are too high and they no longer hold a network advantage to support those prices.***

***Verizon is most vulnerable with industry leading prices, their rate increases won't fully offset cost inflation, leaving EBITDA incrementally negative and unit growth challenged.***

***Verizon struggled to compete, choosing financial discipline over market share. AT&T struggles as well, choosing market share at the cost of lower cash flows.***

***With industry phone growth slowing, Cable Wireless is taking an increasing share of net adds. The incumbents' response to Cable's disruptive pricing may be too little too late.***

***T-Mobile remains the best house on a bad block, with improving network position and low pricing.***





## Agenda

State of wireless

**State of broadband**

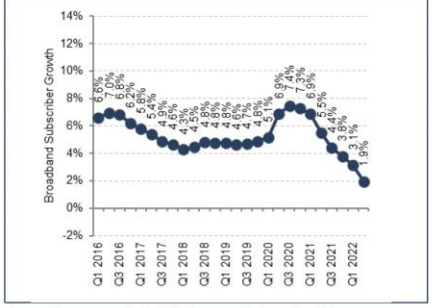
Fixed Wireless Access

Fiber overbuilds

Convergence?

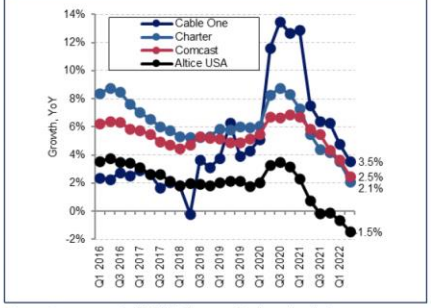
## Cable broadband subscriber growth *has* slowed…

**Cable Broadband Growth, YoY**




Source: Company reports, MoffettNathanson estimates and analysis

**Comcast, Charter, Altice USA, and Cable One: Broadband Growth, YoY**




Source: Company reports, MoffettNathanson estimates and analysis





## …but the *reason* for the slowdown is critical to the debate

**Explanations Matter!**

**In our view, the broadband slowdown appears to owe more to a broad market deceleration than to significant shifts in market share…**

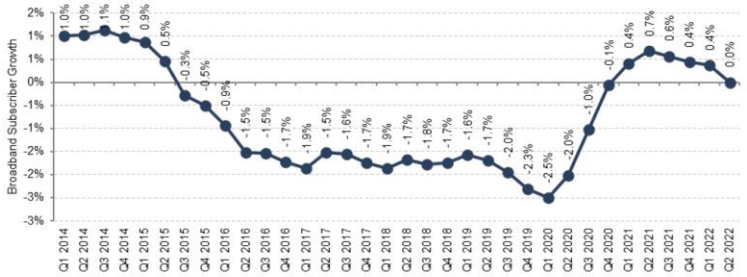
- **Cable broadband churn is at all-time lows**
- **TelCo broadband gains have *not* accelerated**
- **A significant portion of FWA appears to be market expansion**

**…so pricing and capital intensity do *not* appear to be at significant risk**

**Footprint expansion initiatives are likely sufficient to keep broadband net add growth positive**

## Despite fiber expansion, TelCo broadband growth has slowed as well

### TelCo Wired Broadband Growth, YoY



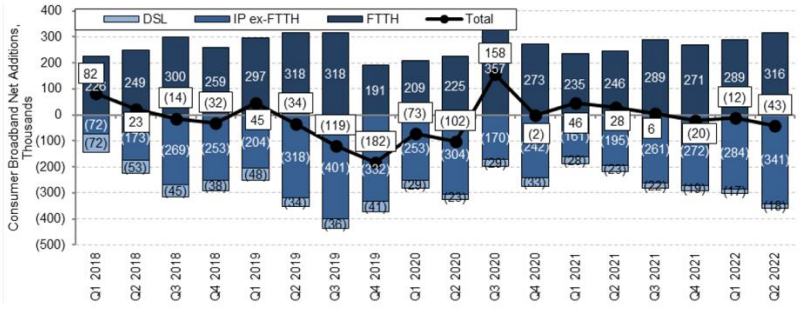

Source: U.S. Census Bureau CPS/HVS, company reports, MoffettNathanson estimates and analysis





## Despite years of fiber construction, AT&T still isn't consistently growing broadband subs on a net basis

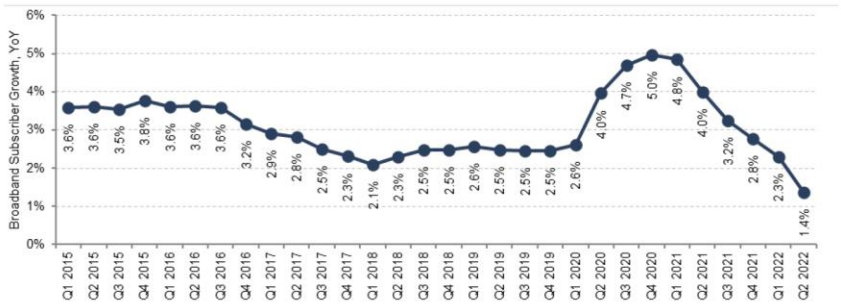
### AT&T: Consumer Wireline Broadband Net Additions, Q1 2018 to Q2 2022




Source: Company reports, MoffettNathanson estimates and analysis

## Total industry growth (wired only) has fallen sharply

**Total Industry Wired Broadband Growth, YoY**



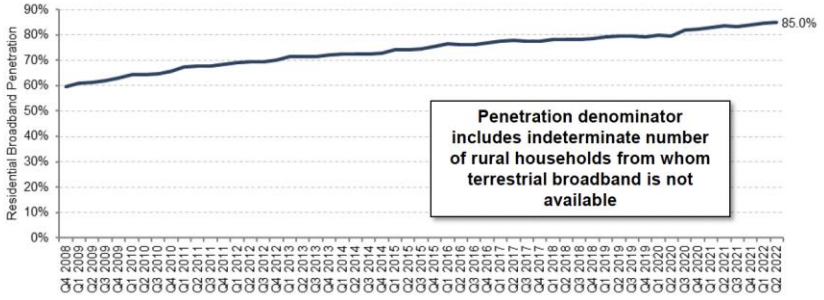

Source: Company reports, MoffettNathanson estimates and analysis





## Total broadband penetration is 85% of *all* households… but penetration is significantly higher as a percentage of *addressable* households

**Residential Broadband Penetration, including Satellite and FWA, Q4'08 to Q2'22**

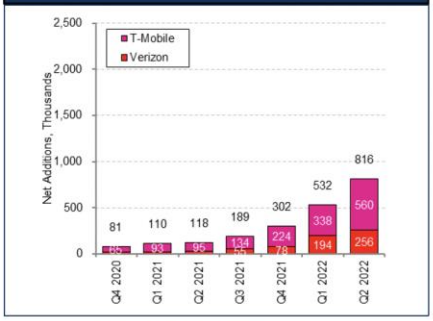



Note: Currently assumes all VZ/TMUS FWA is residential, as commercial share is unknown.

Source: U.S. Census Bureau CPS/HVS, company reports, MoffettNathanson estimates and analysis

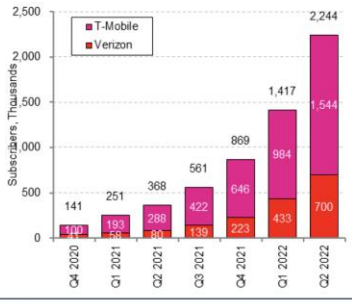
## FWA has grown rapidly… with all the old questions about sustainability still unanswered

**FWA Net Additions (VZ + TMUS only), Q4 2020 to Q2 2022**




Source: Company reports, MoffettNathanson estimates and analysis

**FWA Subscribers (VZ + TMUS only), Q4 2020 to Q2 2022**



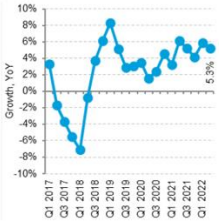

Source: Company reports, MoffettNathanson estimates and analysis



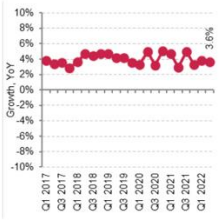


## Despite fears, broadband ARPU growth has thus far remained unchanged… some insurgents are raising prices faster than incumbents

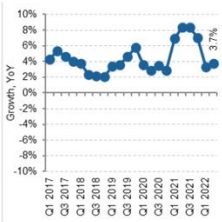
**AT&T: Consumer IP Broadband ARPU Growth Rate**




**Comcast: Residential Broadband ARPU Growth Rate**



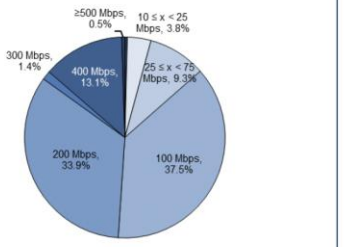

**Charter: Residential Broadband ARPU Growth Rate**




Source: Company reports, MoffettNathanson estimates and analysis

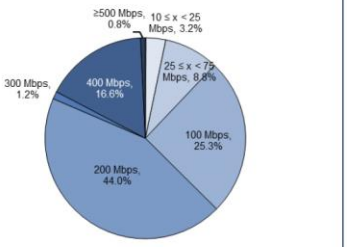
## Mix of speed tiers continues to improve, but still leaves ample room for sustained voluntary up-tiering

### Charter: Residential Broadband Subs by Download Speed Tier (June 30, 2020)




Source: Company reports, MoffettNathanson estimates and analysis

### Charter: Residential Broadband Subs by Download Speed Tier (December 31, 2020)



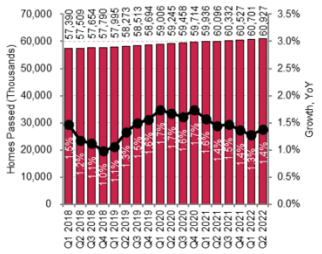

Source: Company reports, MoffettNathanson estimates and analysis





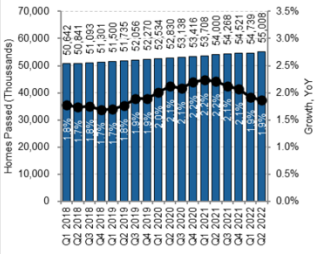
## Comcast and Charter (and other MSOs) are growing homes passed much faster than household formation in an effort to "refill the tank"

### Comcast: Homes Passed Growth




Source: Company reports, MoffettNathanson estimates and analysis

### Charter: Homes Passed Growth




Source: Company reports, MoffettNathanson estimates and analysis

## Large subsidy pools remain for further footprint expansion

**American Rescue Plan Act of 2021**

| Program Name | Funding Amount | Covered Products/Services |
|---|---|---|
| Emergency Broadband Benefit Program | $3.2B | Subsidizes up to $50/month ($75/month in tribal areas) for broadband services, plus a one-time purchase of a connected device up to $100 per eligible low-income household |
| Emergency Connectivity Fund | $7.2B | Eligible equipment or advanced telecommunications and information services (or both) for use by students, teachers, and library patrons at locations other than the school or library |
| Coronavirus Capital Projects Fund | $10.0B | Critical capital projects directly enabling work, education, and health monitoring, including remote options, in response to the public health emergency with respect to the Coronavirus Disease. |

**...and all this is *before* the $42.5B of state-level funding under the BEAD program/JOBS Act**

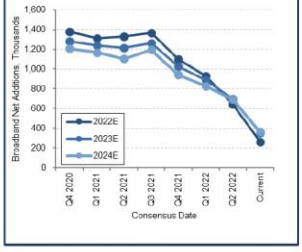




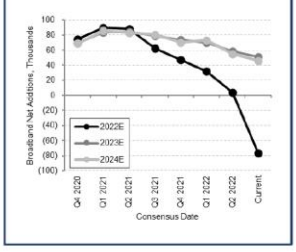
## Expectations for Cable broadband have fallen dramatically

**Comcast: Consensus Broadband Net Additions**


**Charter: Consensus Broadband Net Additions**




**Altice USA: Consensus Broadband Net Additions**




Source: Bloomberg Consensus as of 9/8/2022, Company reports, MoffettNathanson estimates and analysis

## Agenda

State of wireless

State of broadband

**Fixed Wireless Access**

Fiber overbuilds

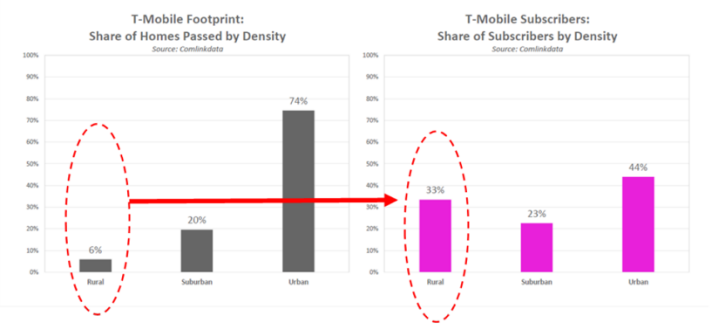
Convergence?





## Proprietary data from Comlinkdata suggests that T-Mobile's FWA subscriber gains are significantly skewed towards rural areas…

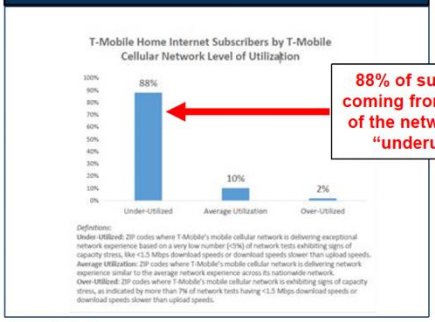
### T-Mobile: Rural Skew in FWA




Source: Comlinkdata

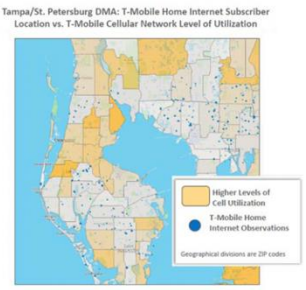
## T-Mobile is "steering" FWA to underutilized cell sectors, suggesting a relatively short runway as excess capacity is exhausted

### T-Mobile Home Internet Subscribers by level of Mobile Network Utilization




Source: Comlinkdata

### Comlinkdata: T-Mobile Home Internet Subscribers by Cell Network Utilization in Tampa/St. Petersburg DMA



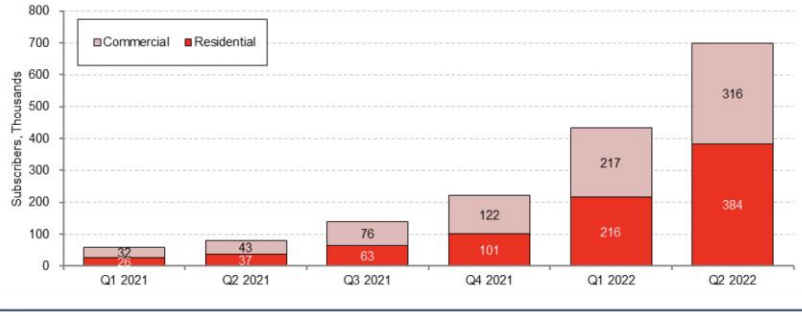

Source: Comlinkdata





## Verizon's FWA subscribers disproportionately businesses, and (anecdotally) from segments not servable by wired broadband (e.g. construction trailers, etc.)

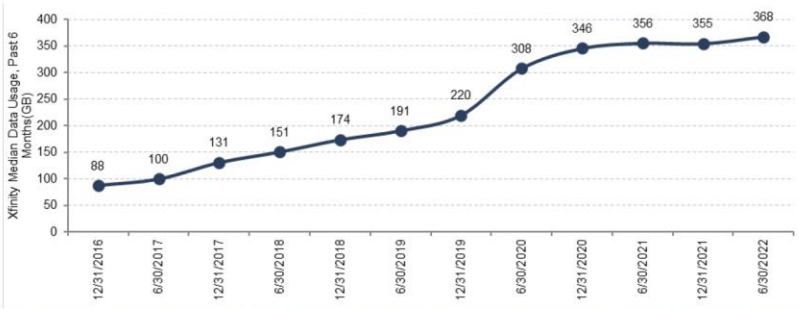
### Verizon FWA: Commercial/Residential Split




Source: U.S. Census Bureau CPS/HVS, company reports, MoffettNathanson estimates and analysis

## Wired usage growth poses a capacity challenge to FWA

**Comcast: Media Data Usage per Month (trailing six-month average)**




Source: Comcast





## We expect the impact from FWA to be felt the most strongly over the next two years; thereafter, we expect growth will moderate

**T-Mobile + Verizon: Fixed Wireless Net Additions, 2020A-2026E**


Source: Company reports, MoffettNathanson estimates and analysis

## Agenda

State of wireless

State of broadband

Fixed Wireless Access

**Fiber overbuilds**

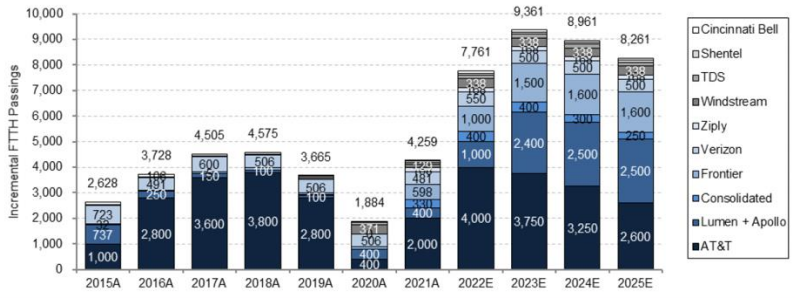
Convergence?





## TelCos are accelerating plans for competitive overbuilds

**U.S. Telecom Providers: Planned FTTH Increments**




Source: Company reports, MoffettNathanson estimates and analysis

## Three significant risks to fiber build ROI's

**Key Considerations for the Cost Side of ROI**

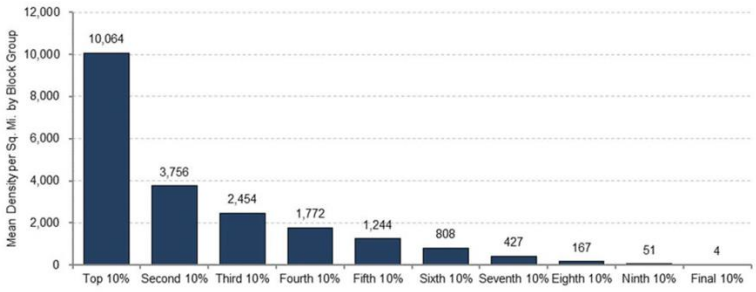
1. **Rising labor and equipment costs**
2. **Rising costs per home passed as lower density markets are targeted**
3. **Rising capital costs due to higher inflation and higher equity risk premium**





## Getting past 40% fiber overbuild coverage means building to some *very* low-density areas

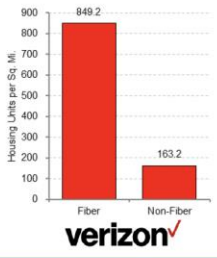
**Average Density by Decile, Housing Units per Square Mile (Using Census Block Groups)**

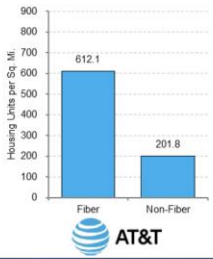


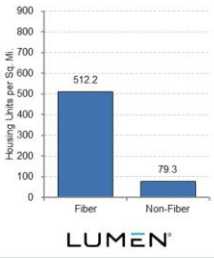

Source: U.S. Census Bureau, MoffettNathanson estimates and analysis

## Operators have already cherry-picked their footprints, deploying fiber to the densest areas

### Density of Fiber-Passed vs. Unpassed




Source: FCC, MoffettNathanson estimates and analysis





## Fiber costs span a wide range even on a per mile basis, reflecting large differences in deployment terrain

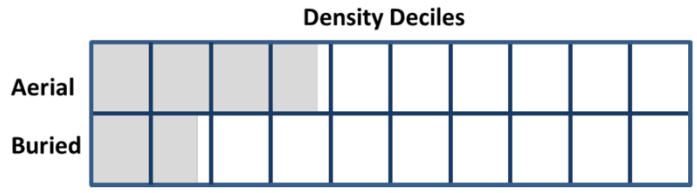
### Cost per Connected Home

| | Low | High |
|---|---|---|
| FTTH per mile, trenched & buried, rural, flat, rocky - to urban | $22,500 | $61,116 |
| FTTH per mile, aerial lashed, rural - to urban | $18,500 | $34,000 |
| Optical line terminal equipment (OLT) | $1,200 | $39,000 |
| Site Cabinets - Optical Netw ork Units (ONU) | $5,780 | $7,225 |
| Customer ONT - indoor | $100 | $425 |
| Customer ONT - outdoor | $270 | $535 |

Source: FCC

## Where are the next builds going to be?

**Schematic of Density vs. Aerial/Buried**








## Agenda

State of wireless

State of broadband

Fixed Wireless Access

Fiber overbuilds

**Convergence?**

## Convergence Apocalypse?

**Mutually Assured Destruction Thesis**





## Three cases for convergence

**Three Different Fundamental Strategic Arguments**

| Churn Reduction | Marginal Cost Advantage | Pricing Flexibility |
|---|---|---|
| Customers value simplicity, single point of contact | Cable distribution infrastructure allows for cost advantage in wireless, or wireless infrastructure allows for cost advantage in broadband | Discounting wireless can substitute for discounting broadband, or vice versa |

## Unlike in Europe, the U.S. TelCo broadband bundle is only narrowly available

### AT&T: Wired Coverage Map

~42% coverage x ~30% fiber = ~13% of US

Source: FCC, MoffettNathanson estimates and analysis

### Verizon: Wired Coverage Map

~18% coverage x ~64% fiber = ~11% of US

Source: FCC, MoffettNathanson estimates and analysis

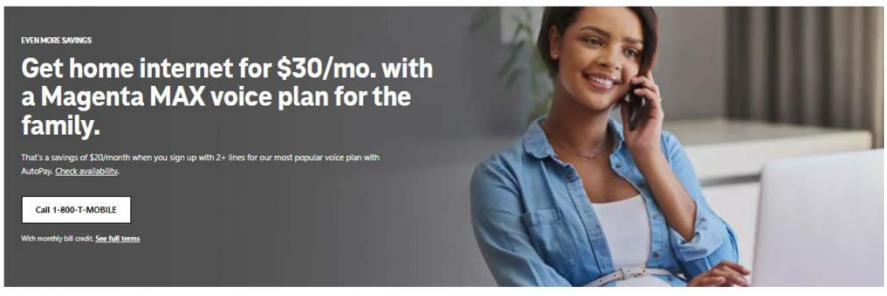
**By contrast, the Cable wireless/broadband bundle is available ubiquitously**





## T-Mobile (and Verizon) are pricing FWA aggressively

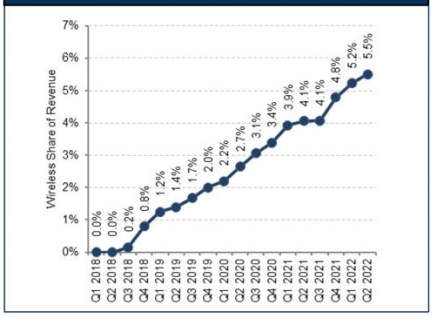
### T-Mobile Home Internet Bundle Discount Ad




Source: T-Mobile

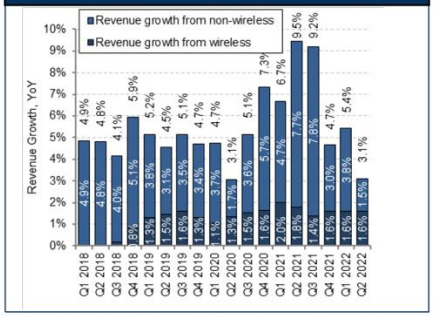
## Cable's wireless business can provide a meaningful offset to decelerating broadband (Example: Charter)

**Charter: Wireless as a Percentage of Revenue**




Source: Company reports, Moffettnathanson estimates and analysis

**Charter: Wireless Contribution to Total Revenue Growth**




Source: Company reports, Moffettnathanson estimates and analysis





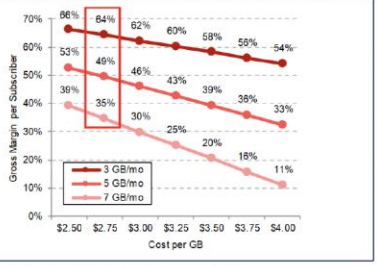
## OpenSignal data suggests Cable's wireless offload is already very successful

**OpenSignal: Total Data Usage**


Source: OpenSignal

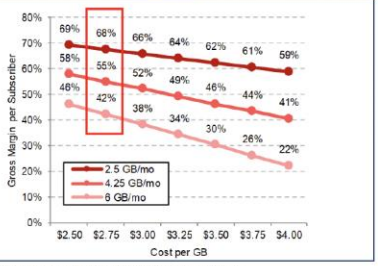
## Given offload, margins are likely higher than most would expect… and would be even higher with additional CBRS offload

### Unlimited Wireless Customer Gross Margin Sensitivity




Source: Company reports, MoffettNathanson estimates and analysis

### Unlimited Wireless Customer Gross Margin Sensitivity assuming *additional* offload



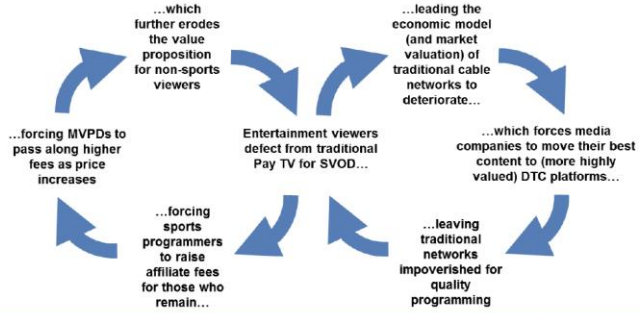

Source: Company reports, MoffettNathanson estimates and analysis





## Video is in the grips of *two* self-defeating dynamics

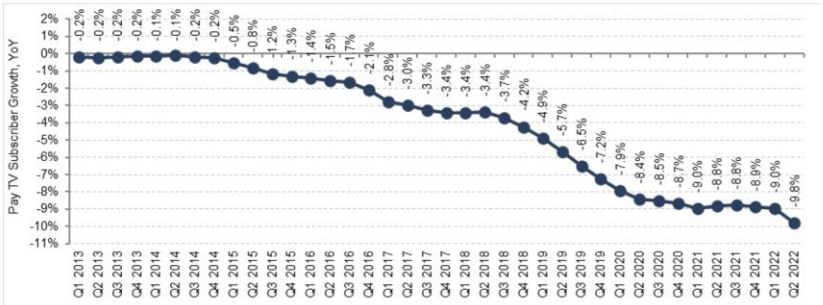
### Twin Vicious Cycles




Source: MoffettNathanson estimates and analysis

## The pace of linear TV cord-cutting *had* reached a plateau… but has taken yet another turn for the worse

### Linear Video Subscriber Growth




Source: Company reports, MoffettNathanson estimates and analysis





## Summary and Conclusions

### No Easy Answers

**In our view, the broadband slowdown appears to owe more to a broad market deceleration than to significant shifts in market share…**

- **Cable broadband churn is at all-time lows**
- **TelCo broadband gains have *not* accelerated**
- **A significant portion of FWA appears to be market expansion**

**…so pricing and capital intensity do *not* appear to be at significant risk**

**Footprint expansion initiatives are likely sufficient to keep broadband net add growth at least *narrowly* positive**

**Wireless is now Cable's Act III**

## Company Specific Disclosures

**AT&T Inc. (T)**

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SVB Securities LLC makes a market in T-Mobile US, Inc..

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In the past 12 months, an affiliate of SVB Securities LLC has received compensation for providing non-securities services to Verizon Communications Inc..
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# Call Notes: October 27, 2022
# Subject: CTAM Competition + Retention Working Group Call

## Roll Call/Welcome

Breezeline – Kate Haas
Cable One – David Ballew
Charter – David Gray
Comcast – Cassie Fincher
Cox – Tony Maldonado, Zack Fields, Wendy Rosen, Krista Ercoli
MCTV – Elizabeth Kwolek
Mediacom – Eric Schoenfeldt
CTAM – Mark Snow, Vicki Lins, Ariane Guardarramas, Janine Lee, Nakesa Kouhestani + Renee Harris

## Research Readout: Consumer Perception of Fiber vs. Cable Broadband

Sid Addanki, Manager of Research & Analytics, HarrisX, presented an overview of the attached "Cable Broadband vs Fiber: A comparison of consumer perceptions Q42021 & Q2 2022".

Highlights include:

- Head-to-head with Fiber, Cable still stands for wider availability and easy to understand technology but trails innovation, speed, WFH and gamer lifestyles.
- Comparing Q4 2021 to Q3 2022, Cable has closed the gap somewhat with Innovation, download/upload speeds, WFH and Gamers.
- For Cable Broadband customers specifically, perception has improved on multiple fonts in Q3 2022 vs Q4 2021.
- Among Fiber customers though, any improvements in perception of Cable Broadband are outweighed by improvement in perception of Fiber.
- Cable Broadband has done a good job of marketing itself to current customers, but so has Fiber
- Cable Broadband is closing the gap on some important negative points of comparison (innovation and upstream) but there is more work to do.
- Consumers perceive more weakness when talking about upstream than the concept of symmetrical speeds. Blazing fast upstream claims could be a way to approach this.
- MSOs should focus heavily on the innovation angle in their network branding and messaging.

**Questions from the group**

*For Slide 3, Cox asks if all these changes are statistically significant?*

- HarrisX will run significance testing and include this information in the deck to the group.

*Is this a total sample – all consumers?*

- Yes, the sample includes household decision makers 18+ with internet access to take the study; movers are a small sub-set of this larger TCS sample.

*How are consumers defining technology understanding in the study?*

- The question is worded along the lines of does the consumer fully understand how the technology works – for example, with fiber – does the consumer knows how fiber is different from Cable; on the backend of the scale the consumer could choose they do not understand the technology. *CTAM notes a page can be added to the study that outlines how the questions were asked for clarity.*

*When will the HarrisX Q4 study that is currently underway be ready?*

- The Q4 2022 study (which is currently in the field) should be ready the third week of January 2023.

**Comments from the group**

Cox notes that Cable has a unique challenge - FWB and Fiber are both targeting Cable whereas Cable has two different targets and must develop strategies that address both FWB and Fiber therefore it will be helpful to have FWB analysis.

Cox also noted that they agree with New Street Media's analysis which was shared on a previous call in that Cable has a marketing challenge in the next decade. In addition, Cox mentioned that New Street Media cited that consumer churn problems occurred at sub 200 Mbps levels, but Cox did some research and found that on their side churn did not match New Street's conclusion. Cox's churn is on the low tiers and the high tiers and is the lowest in the mid-range.

**Requests from MSOs**

1. Cox asks if there is any way CTAM can help validate or dismiss New Street's claim of churn at sub 200 Mbps as they feel this will be important to clarify.
    - CTAM notes that the challenge with a lot of consumer survey work comes down to respondents not knowing (or badly recalling) what tier/speed they pay for.
    - However, HarrisX noted that they have a separate product which scrapes consumer billing data that includes speed tiers. CTAM will discuss details about this product and circle back to the MSOs.

2. In referencing New Street's claim that all MSOs are being impacted by FWB but that moves had little to do with it, Cox would like to know if CTAM has any additional information to validate this claim. If this is not true, Cox doesn't want this narrative floating around.
    - HarrisX notes that it does look like for movers, Fiber has more of an impact on switching than FWB; CTAM and HarrisX can parse the 5G and FWB switching effects on movers in the Q3 mover study being processed now.

   MSOs would like CTAM to provide one consolidated POV of the analysts (Jonathan Chaplin and Bruce Leichtman) and HarrisX's research findings to provide an understanding of the FWB impact on the move markets.
    - CTAM will work to develop a POV and will add Craig Moffett for his POV on FWB as well.

3. Cox is working hard on 1P internet churn (broadband only subscribers) – they would like to hear if any MSOs are having success in moving the needle on this.
    - HarrisX can add 1P Internet churn analysis to the current Q3 study

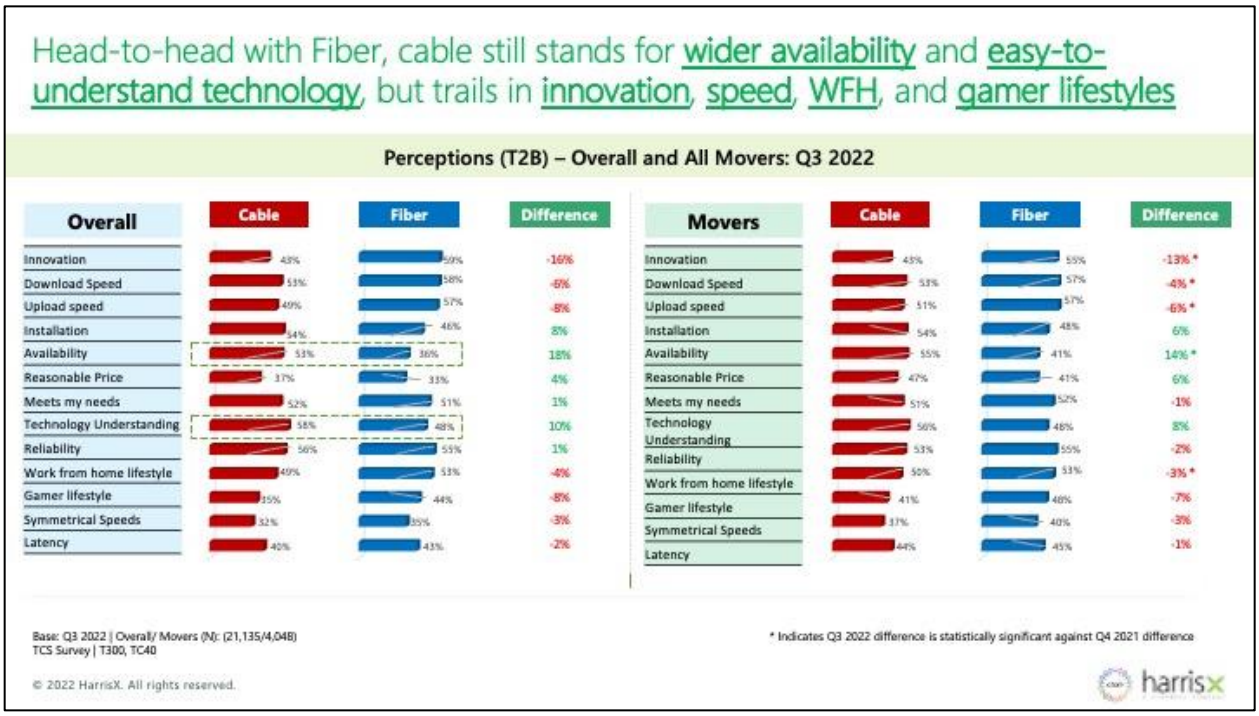
## New from the C5 Group: Network Health and Customer Loyalty

As many of you know, C5 is The Cable Center Customer Centric Consortium which is an MSO group focused on advancing customer experience and care in the cable industry.

One of the C5 members (GCI) has hired a statistician/machine learning data scientist that analyzed how the health of the network effects customer loyalty. His conclusions were statistically sound but surprising and somewhat counter-intuitive. CTAM is working to re-launch the Marketing Science Working Group to discuss this, among other topics.

Given C5's growing focus on customer experience and the intersection of CX and Marketing (particularly retention), CTAM feels it may be beneficial to have a joint call with C5 and MSO's retention marketers in the new year. CTAM will coordinate with the groups to find a time for the call.

Presentation: *Cable Broadband vs. Fiber Perceptions*

## Cable has closed the gap somewhat with Innovation, Download/Upload Speeds, WFH and Gamers in Q3 2022 compared to Q4 2021

**Perceptions (T2B) – Overall: Q4 2021 v Q3 2022**


Base: Overall | Q4 2021 / Q3 2022 (N): (3,904/21,135)
TCS Survey | T300, TC40

* Indicates Q3 2022 difference is statistically significant against Q4 2021 difference



harrisx

## For Cable Broadband customers specifically, perception has improved on multiple fronts in Q3 2022 vs Q4 2021

**Perceptions (T2B) – Cable Customers' perception of cable and fiber**


Base: Overall Cable Customers | Q3 2022 (N): (10,447)
TCS Survey | T1003, TC40

* Indicates Q3 2022 difference is statistically significant against Q4 2021 difference



harrisx

## Among Fiber customers though, any improvements in perception of Cable Broadband are outweighed by improvement in perception of Fiber

**Perceptions (T2B) – Fiber Customers' perception of cable and fiber**


Base: Overall Fiber Customers | Q3 2022 (N): (3,339)
TCS Survey | T1003, TC40

* Indicates Q3 2022 difference is statistically significant against Q4 2021 difference



harrisx

## Insights & Takeaways

- Cable Broadband has done a good job of marketing itself to current customers, but so has Fiber.
- Cable Broadband is closing the gap on some important negative points of comparison (innovation and upstream) but there is more work to do.
- Consumers perceive more weakness when talking about upstream than the concept of symmetrical speeds. Blazing fast upstream speed claims could be a way to inoculate ourselves here.
- We have openings we can leverage now…we are considered more available, easier to install, and easier to understand.
- MSOs should hammer away on the innovation angle in their network branding and messaging.

# Call Notes: December 1, 2022
# Subject: CTAM Competition + Retention Working Group Call

## Roll Call/Welcome

Cable One – David Ballew
Charter – Kathleen Griffin
Cox –Wendy Rosen, Tony Maldonado
GCI – Stephanie Lovett
Mediacom – Eric Schoenfeldt, Dianne Schanne
CTAM – Mark Snow + Renee Harris

## GCI Update on Broadband + Mobile Bundle Success

Stephanie Lovett, Director, Product Marketing, GCI, presented the attached "GCI Retention + Competition" deck. (Note: all pricing is public advertised information)

Highlights include:

- GCI serves the state of Alaska. There are about 750,000 people in Alaska and about and 375k Households.
- Internet Plans they offer are:
    - Fast - $79.99 | up to 200 Mbps
    - Faster - $104.99 | up to 400 Mbps
    - Fastest - $154.99 | up to 800 Mbps
    - 2 GIG Red Unlimited - $179.99 | up to 2 Gigs
        - More than 30% of their customers are on their 2 Gig plan
- GCI purchased the mobile network from ACS in 2015
    - The ACP mobile network has a low net promotor score and negative reputation around coverage, so GCI worked hard to change that. Upgrades to 5G started in 2022 and now they are 2x faster than AT&T.
- Mobile Plans they offer are:
    - Explore – 4 lines $35 each
    - Peak – 4 lines for $40 each
    - Summit – 4 lines for $48 each
    - Apex – 4 lines for $68 each
- GCI's GCI+ Bundle was launched in January 2021 to grow mobile with prices as low as $25 for unlimited mobile for up to 10 lines
    - GCI+ is now more than 15% of the internet customers and more than 30% of postpaid mobile
    - GCI offers perks such as double miles on Alaska airlines for every $1 spent and 4x the miles on anniversary date. They also offer Yukon TV streaming service with core TV for $4.99 and a top TV package for $99.99
    - GCI learned that there was significant churn reduction with GCI+ compared to Internet only
    - Margins have also improved per account with GCI+
    - GCI does not offer any upfront discount pricing as they found that customers do not like when the discount changes
    - GCI will share a sample of a combined bill for the group to view
- Competition
    - With Starlink recently launched across Alaska, GCI is preparing for increased competition
    - Verizon home internet is available in limited areas in Alaska
    - AT&T 5G home internet is still not available
    - The biggest threat right now is the largest ILEC upgrading to fiber (Alaska Communications Fiber)

        - GCI is keeping a close eye on zip codes on where fiber is being deployed
- GCI's strategy to prepare for the competition has been to:
    - Test & learn area with specific tactics and offers
    - Market as "Better than fiber" – starting with Fiber+ followed by GCI+
    - Revise messaging and tactics for current and non-customers

Questions from the group

- *How are consumers reacting to added benefits to the integrated offer?*

  GCI has a deal with Alaska Airlines where they provide a mile per dollar spent with them if a customer pays their bill on time, on GCI+ a customer gets double the miles and 4x the miles on their anniversary date for that month – this benefit resonates with customers differently. Consumers who live in Alaska often want to travel at least twice a year so airlines miles are a good benefit to offer - others who don't travel may not be as interested. GCI feels what really resonates with customers is the low price, integrated bill with one provider.

- *Regarding the integrated bill, what are the details?*

  The bill is one total price, any additional charges the customers incur are itemized. GCI believes the allure to the customer is having one low price and one provider. GCI also offers all the latest iPhones which is appealing for consumers.

- *How are customers reacting to sticker shock of having one bill?*

  There was concern about this and was one reason for resistance to launching the product but there has not been any negative feedback regarding having one bill.

- *Do you have a sense of how consumers understand Fiber+?*

  Some research shows that the term Fiber tends to get a better rep than Cable, so it seems consumers may view it as a better product. That said, GCI wants to market that what the customer is getting is more than the tech itself.

- *Does the competitor coming into GCI's area offer unlimited plans as part of their services and, if so, is that playing into any decisions to offer an unlimited bundle?*

  Yes, they have always offered all their plans as unlimited and that has been a significant differentiator and is a reason GCI has "endless" internet (Note: Endless Internet means you can keep going after you hit a cap, but you're throttled to 10mb down or you can pay for additional bandwidth).

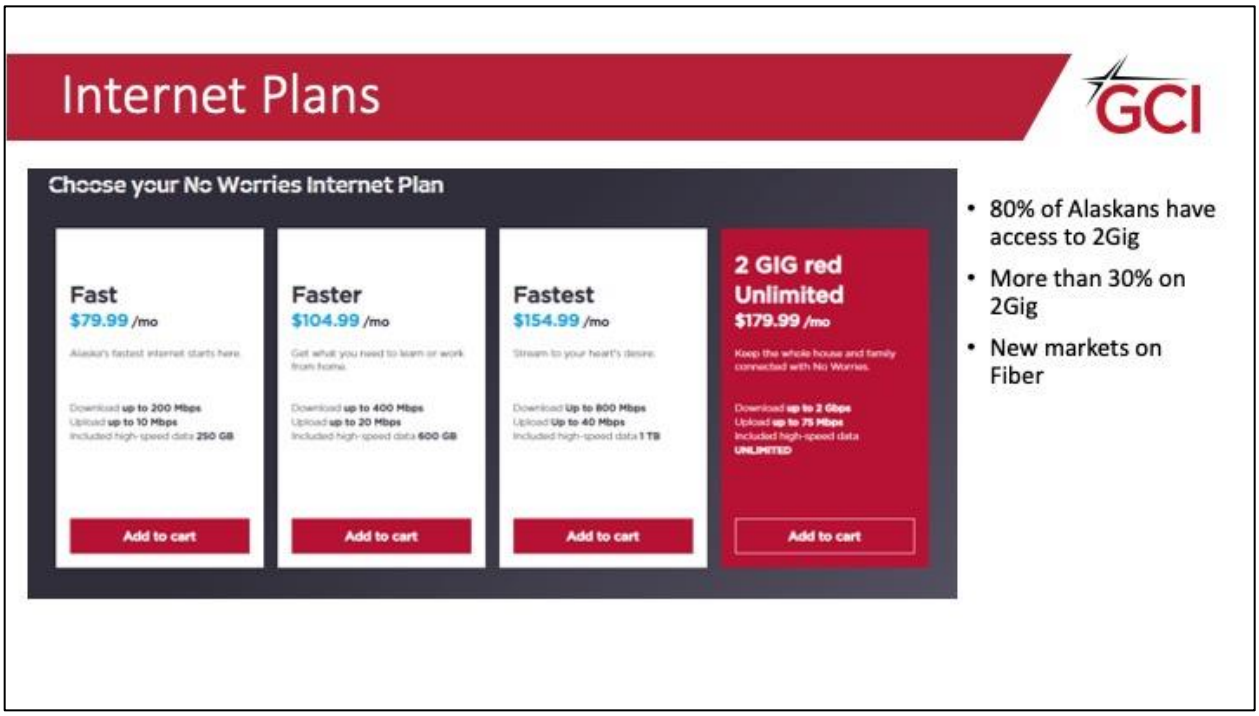
- *Regarding Fiber+, why was the decision to keep it as a network descriptor vs Internet?*

  It describes the network but we don't shy away from using it to talk about the product specifically.

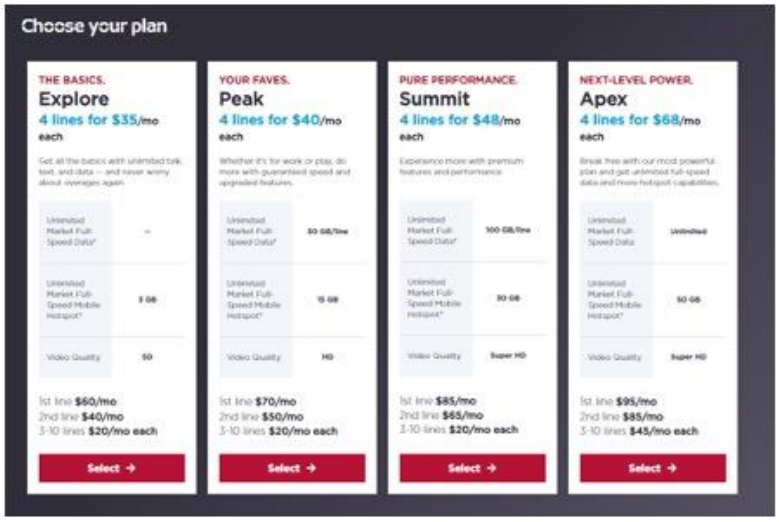
## Next Steps

- The Competition + Retention group will continue in 2023 and will steer a renewed push around Industry Positioning.
- CTAM will be in touch in the coming days to poll the group for a kickoff call in January and provide more information on objectives for 2023.

Presentation: *GCI Retention & Competition*

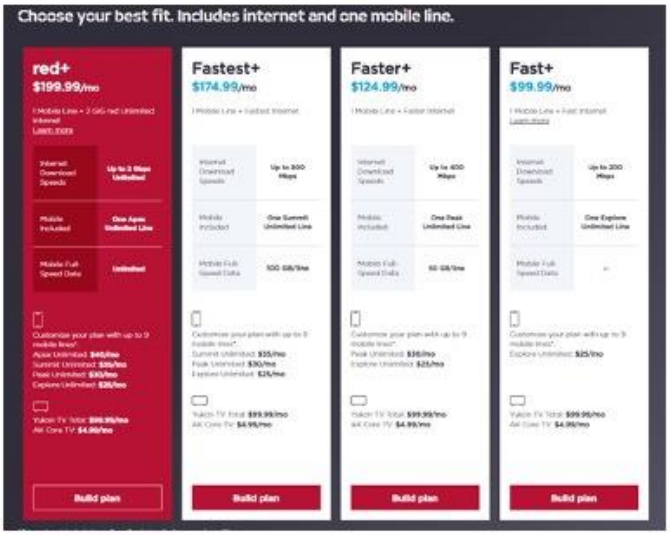



# Mobile Plans




- Purchased mobile business from ACS in 2015
- Low Net Promoter score, negative reputation around coverage
- Hard to get traction for growth
- Upgrades to 5G started 2022 (first 5G provider in Alaska)
- Now 2x Faster than AT&T

# Path to GCI+




- Launched in January 2021
- As low as $25/line for unlimited mobile, up to 10 lines
- Double Alaska Airline miles per $1 spent, 4x miles on anniversary date
- Add on Yukon TV for Core $4.99 or Total $99.99
- GCI+ is now more than 15% of internet customers, more than 30% of postpaid mobile
- ***Reduces Internet churn by up to 40% compared to internet only***
- ***Improved margin per account***

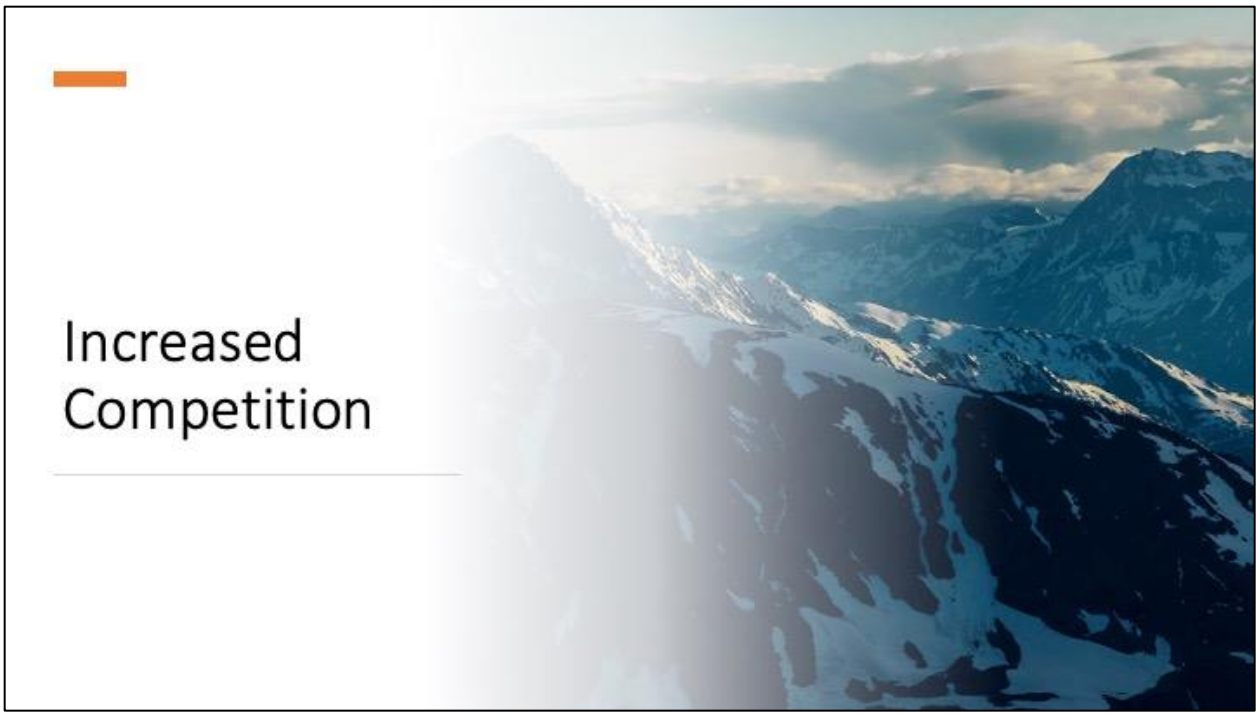
# Bill presentment

GCI+ $103.20

| Description | Service Name | Amount |
|---|---|---|
| GCI+ Fast | | $99.99 |
| Fast+ | [redacted] | Included |
| Explore Unlimited+ | (907) 521-[redacted] | Included |
| | | $99.99 |
| Alaska Universal Service Fund Surcharge | | $1.11 |
| E911 Surcharge | | $1.25 |
| Federal Universal Service Fund Surcharge | | $0.84 |
| Universal Access Surcharge | | $0.01 |
| | | $3.21 |
| TOTAL for GCI+ Service | | $103.20 |

- No admin fee
- If there are additional lines, they are in a "mobile" section on the bill.
- "service name" is the identifier like MAC ID and phone number



# Increased Competition

## New Competition

- Starlink just launched across Alaska
- Verizon home internet available in limited areas
- AT&T 5G home internet still unavailable
- Largest ILEC upgrading to fiber

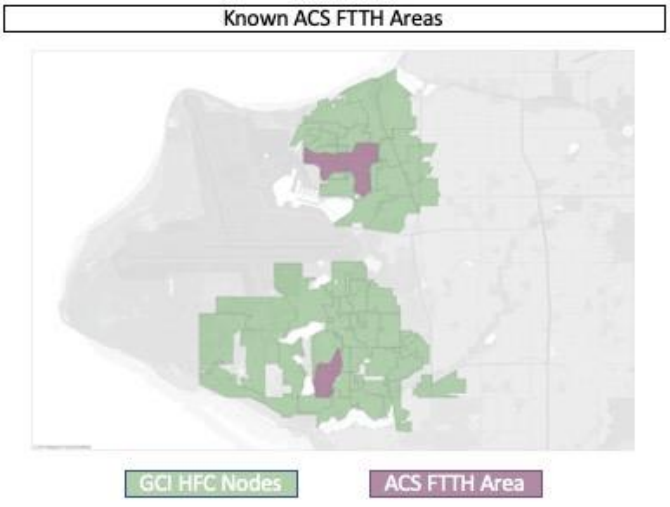
# Alaska Communications New Plans


- $40 off any plan for 3 months
- Free installation
- HomePass is $5.99/mo after 12 mos
- First pod is included then $99/pod
- Price goes up $40/mo after 3 mos

# ACS FTTH Areas

**Two known target areas**

- 99517 – started June
- 99502 – started September



# ACS FTTH Areas

**Identified using Locate Data**

- Locates required for digging
- Identified ACS FTTH locates
- Have timeline of locates
- Filtered to house drops

ACS FTTH Locates for Houses

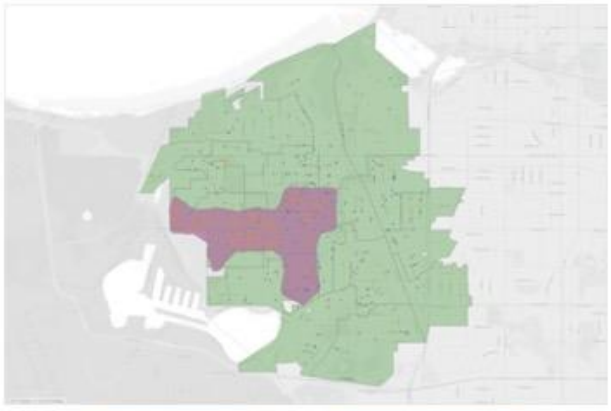
6/15/22 Locate Request Date 10/25/22

# 99517 GCI Internet Customers

**Differing trends**

- Growth outside of ACS Area
- Loss inside of ACS Area

Relationship Status in Period 6/15/22 – 10/25/22



Connected Disconnected

## Response Testing

## Marketing: Turnagain as Test & Learn Area

### Trench War Fare Initial Approach

- Tactics
  - Special Offer
  - Targeted Email
  - Targeted Direct Mail
  - GCI Gives Events
  - Direct Sales Door to Door Activity
- Offers
  - Free Streaming Device
  - GCI+
  - Free iPhone 14
  - Introduce AK-Fi

## Turnagain Campaign Phase 1 July 2022

### Target whole zip code 99517

- **Free Apple TV Email to existing customers**
  - 3,643 total emails sent
  - 38% Avg open rate
  - 10% Avg click thru rate
  - 563 New Apple TVs sold

- **$99 GCI+ Direct Mail to non-customers**
  - 457 pieces mailed
  - 10 New services or 3% yield
  - 1-month ROI
    - **10 internet**
    - **5 mobile lines**

•GCI Gives Outreach in Neighborhood with Cleanup Day




## Phase 2 Trench Warfare 9-10/22

- **#2 Email – Free Apple TV or Amazon Fire TV**
  - 2,800 emails sent
  - 39% open rate, 5% click
  - **Total Sold: 328**

- **GCI+ for $99 Direct Mail to non-customers - Includes free iPhone 14 offer**
  - 4,000 Non-Customers
  - *3% yield, 120 services sold*

- **Email Message with Fiber+/AK-Fi upgrade**
  - 3,800 Sent 10/19
  - Open Rate 41%, Click Thru 5%
  - 30% clicked the video
  - 30% Fiber+ button
  - 22% AK Fi linked word
  - **18 added AK-Fi as of 10/27**

# Results – In Target Zip Codes

Internet avg. monthly churn

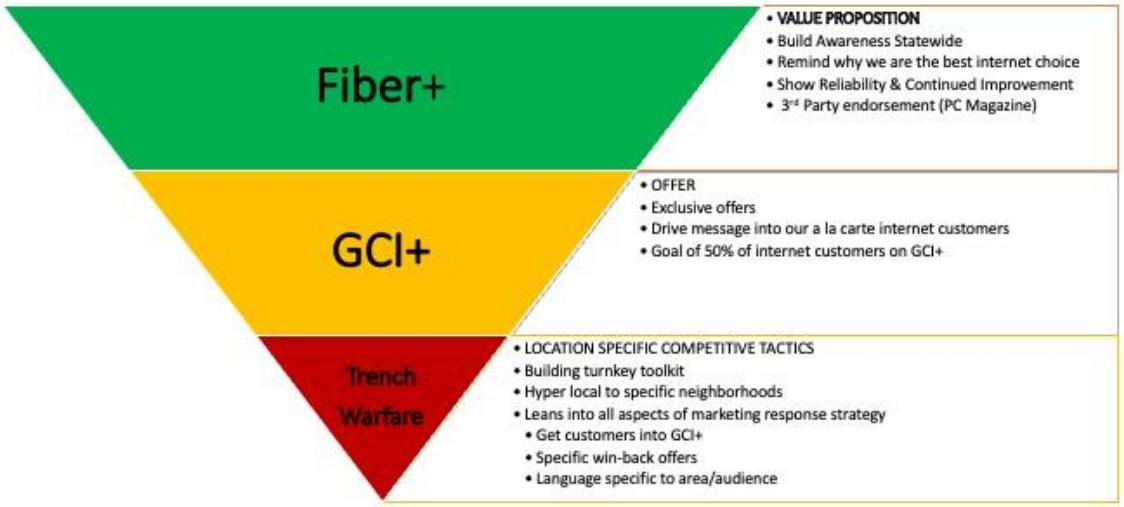
| | |
|---|---|
| • Customers without locate | 1.5% |
| • Customers with locate | 5.0% |
| • GCI+ with locate | 2.5% |
| • GCI+ & Streaming device with locate | 0% |

# Better than Fiber


gci.com/internet/fiber-plus


Blog Post

# Marketing Strategy






# Revised Messaging/Tactics

Current Customers


Non-Customers

## 2 5G Internet Messaging Working Group

# Call Notes: September 16, 2022
# Subject: CTAM 5G Internet Messaging Working Group Call

### Welcome/Roll Call

Call Attendees:

Altice – Scott Meador, Bryan Zash
Armstrong – Dave Wittman, Peter Grewar, Kelly Ann McMillin
Atlantic – Craig Marzullo
Breezeline – Kate Haas
Cable One –Isabelle Jazo, David Ballew Jim Obermeyer
Charter – Joe Carillo, Daniel Pastore, David Gray
Comcast – Sarah New, Morgan Daloisio
Cox – Joel Frost
GCI – Stephanie Lovett
MCTV – Katherine Gessner
Mediacom – Eric Schoenfeldt, David McNaughton
CTAM – Mark Snow, Jes Johnson + Renee Harris

### Review CTAMs new website: factsabout5g.com and MSO 5G web pages

CTAM has secured a domain for 5G awareness: factsabout5G.com. Currently the site is not live – the site is under development in WordPress. Please click the following link to view the site contents and **include any comments or feedback you may have**:

https://docs.google.com/document/d/11I1rrnJDhijoeLfnFUmmJAr0Wlfi-y7OeoSObVSscg4/edit#heading=h.twarhfvsze6k

The goal of the site (and articles/blogs/sites from the MSOs) is to fill up organic search results with the truth about 5G Home Internet – so we can intervene with consumers who are casually searching for 5G Home Internet, so they understand the facts (from fiction) and limitations of 5G Home Internet. CTAM will be careful to not undercut 5G Mobile services but to point out the facts specifically about 5G Home Internet.

CTAM believes that this website, along with MSO resources can be a compelling force to counter the current narrative shaped only by VZW and T-Mobile.

Charter has a resource webpage that discusses the "The Truth about 5G" – https://www.spectrum.com/resources/internet-wifi/the-truth-about-5g-home-internet

Comcast also has a page that discusses 5G: https://www.xfinity.com/compare/xfinity-vs-t-mobile-5g-home-internet

Suggestions for CTAM 5G site from MSOs:

- Mediacom notes that they would like to point out that 5G is really 1G or less in terms of speeds and notes that the data packets are delivered on the QCI-9 priority compared to mobile voice and other prioritized traffic on mobile (https://en.wikipedia.org/wiki/QoS_Class_Identifier). Essentially, 5G Mobile is prioritized over 5G Home Internet. CTAM will include a consumer-friendly version of this messaging in the content on our new site.

- Armstrong notes that there should be a link out to the 10G story included (CTAM is looking into both NCTA and CableLabs resources for this).
- Cox mentioned that the biggest way to combat 5G Home Internet will be the stability of the network – as 5G Home Internet providers ramp up subscribers, it will be inevitability be a strain on their network – is there a way to quickly quantify that it will get worse? CTAM agrees and are working to include details about the congestion of the network in heavy traffic areas, etc.
- Cox also pointed out that most consumers do not understand what 5G (Mobile or Home Internet) is and are simply trusting the "brand" (T-Mobile or Verizon) they are familiar with when signing up – so we need to educate the consumer on what they are really getting with 5G home Internet.
- MCTV noted they have seen a lot of T-Mobile business commercials so we may also want to address this area as well.
- Cable One notes honing in on emotive factors such as reliability should be included in the headlines. Cable One also notes that consumers love short videos such as TikTok or Reels – if there was an ambassador or user who creates a short video that speaks honestly about their 5G Home Internet experience that may resonate with consumers.
- Mediacom also notes there is an opportunity to discuss gamers and latency on the site.
- Cox notes it will be important to point out to consumers that Cable is more reliable than 5G Home Internet while being cognizant of the issues customers may have with Cable.
- Cable One notes regarding the reliability piece, analysis they have seen from 3rd party vendors does highlight the inferiority of 5G Home Internet compared to customer experience of major MSOs and what is highlighted is peak vs high peak.

**Round Robin Discussion: Who is already doing what in terms of messaging / de-positioning 5G in targeted marketing, broad media, or even call center talking points? What is working (or not working)?**

Have any MSOs done anything in the market to deposition 5G Home Internet? If so, has it worked or not worked?

- Armstrong noted in markets where T-Mobile has done local marketing, Armstrong did a couple of direct mail pieces that focused on the interference factor by placing a large magenta/hot pink chainsaw (poking fun at T-Mobile's color) on the piece that indicates the need to remove interference and push for consumers to read the fine print regarding 5G home internet. They also did a cross channel spot using the magenta chainsaw I play to show customers they would need a chainsaw to remove trees in order to get their 5G Home Internet – see clip here: https://vimeo.com/719987888. It's too early to determine performance but these are the types of messages they are starting with in de positioning 5G. They are focusing these messages in markets where the price point for 5G Home Internet would be tempting to consumers.
- CTAM uncovered a positioning ad from Comcast on iSpot: https://www.ispot.tv/ad/2dpH/comcast-xfinity-weve-become-nocturnal. It pokes fun at a family having to become nocturnal to share the T-Mobile Home Internet connection and makes several points about capacity and the limitations of the service for families.

**CTAM Message Testing?**

CTAM asked if MSOs on the call were interested in CTAM conducting message testing of positioning statements that may resonate with consumers?

- Armstrong noted that any research on what message resonates best with what segment of the populous is always helpful.

CTAM noted that in the HarrisX preliminary research on Rural America, they found that rural, young, less educated people were the most likely to be 5G Home Internet users. A full read-out on this work is forthcoming.

- Cox notes that early work they did from a concept prescriptive standpoint showed a slightly different view of who the likely adopters would be than what we are seeing in the marketplace. Cox believes this is caused by:
    - When presenting a concept to someone, you're fully educating them on what they are receiving but what we're seeing in the marketplace is that less consumers are running to get T-Mobile 5G but are more so running away from problems with their existing provider. Therefore, retention should be a big focus when combating 5G.

Question from Cable One - *What do we think about the new version of the T-Mobile service with the 100GB data limit? That is the same price. Rolling out a service that's lesser so early in the lifecycle of the product, seems odd.*

- CTAM wonders if this move is meant to make sure the subscriber total momentum remains solid because of the narrative they've positioned with Wall Street.

Comcast shared the following T-Mobile plan features:
https://www.t-mobile.com/support/plans-features/home-internet-lite
https://www.t-mobile.com/support/plans-features/data-estimator

## Next Steps

CTAM will poll the group for a call in two weeks.

# Call Notes: September 30, 2022
# Subject: CTAM 5G Internet Messaging Working Group Call

## Welcome/Roll Call

Armstrong –Peter Grewar
Atlantic – Craig Marzullo
Cable One –David Ballew
Charter – Joe Carillo, Jennifer Ingram, David Gray
Cox – Tony Maldonado
MCTV – Elizabeth Kwolek
Mediacom – Eric Schoenfeldt, Dianne Schanne
CTAM – Mark Snow, Jes Johnson + Renee Harris

## Review factsabout5g.com Website Updates

The factsabout5g.com website is live! Please visit https://factsabout5g.com to view the site.

CTAM noted the following:

- The site is a work in progress and can be updated as needed
- 5G Mobile and 5G Fixed Wireless is explained
- The site acknowledges 5G may help some consumers who are in markets that only DSL
- It spells out that the "G" in 5G stands for generation not Gig
- Includes a link Comcast's "Nocturnal" spot https://www.ispot.tv/ad/2dpH/comcast-xfinity-weve-become-nocturnal

If you would like to provide comments or suggestions for the site, please do using the following link:
https://docs.google.com/document/d/11I1rrnJDhijoeLfnFUmmJAr0Wlfi-y7OeoSObVSscg4/edit

## Review Messaging in the market space

Do any MSOs have any current messaging in market?

- Mediacom may have some messaging that aired in 2021 – they will check and circle back.

CTAM has access to a HarrisX overnight poll which is an agile research approach to getting quick message testing completed fast. CTAM could have an overnight poll done to test any messages.

CTAM noted that New Street Research held a call this morning that addresses broadband market share drivers – please see attached deck and please click the following link to view the presentation: https://www.newstreetresearch.com/download-page/replay-broadband-market-share-drivers-series-purchasing-and-churn-decision-drivers/ You will be required to enter your email to authenticate.

CTAM asked MSOs how in the weeds they would like to engage on the message planning and execution.

- Charter feels the way it has been handled thus far has been fine – having regular calls to check in with the group helps to give MSOs a chance to give input but does not slow down the process.

## Next Steps

The group agreed to shorten calls to 30 minutes and extend the bi-weekly call series through November 11. Our next call will be held October 14.

# Call Notes: October 14, 2022
# Subject: CTAM 5G Internet Messaging Working Group Call

## Welcome/Roll Call

Call Attendees:

Armstrong –Peter Grewar
Cable One –David Ballew
Cox – Tony Maldonado, Betty Jo Roberts
MCTV – Katherine Gessner
Mediacom – Eric Schoenfeldt, Dianne Schanne
CTAM – Mark Snow, Sloane Stegen, Jes Johnson + Renee Harris

## Review updated factsabout5g.com Website

As per the call two weeks ago, the factsabout5g.com website is live. Please visit https://factsabout5g.com to view the site.

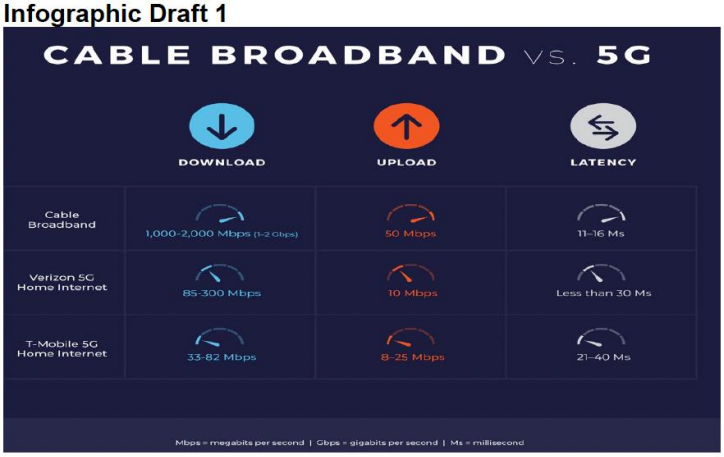
CTAM has taken the feedback from MSOs and have updated the site adding:

- A "Long Story, short" bullet point list to give consumers a basis to reference
- A navigation list of topics
- Updated 5G pros and Cons infographic

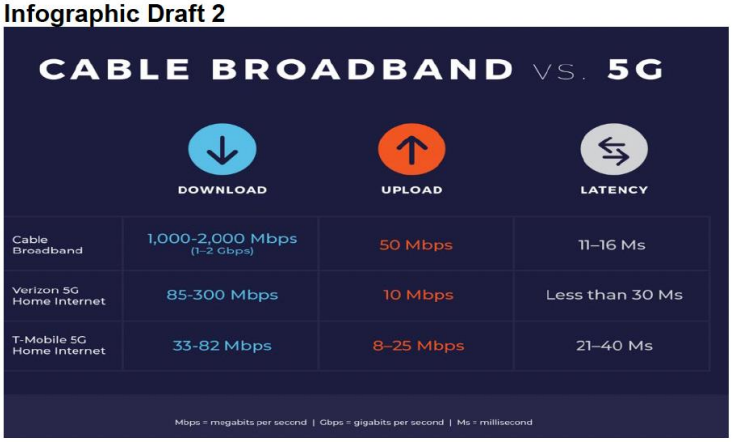
## Update on 5G vs. Cable Broadband perception work in Q4

CTAM shared the attached three infographics ideas on presenting speed comparison regarding Cable Broadband vs 5G.

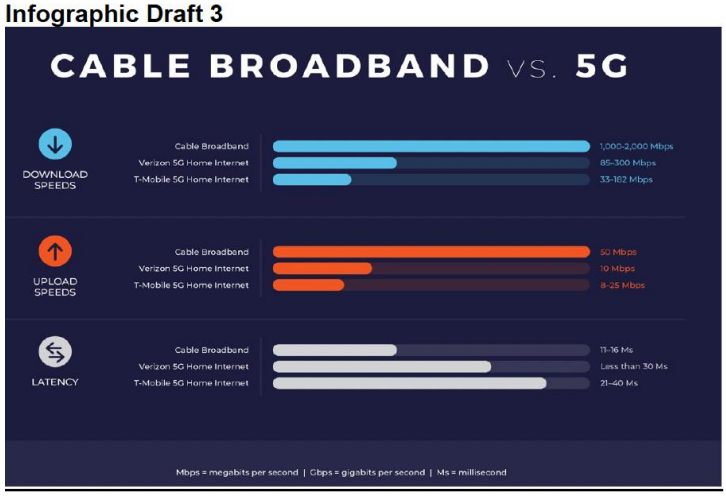
**Infographic Draft 1**




**Infographic Draft 2**




**Infographic Draft 3**



Questions from group

How is this information given to consumers?

- The chosen infographic will be added to the factsabout5G website.

Comments from the group

- Cox notes Latency should be defined for consumers or possibly removed.
- If Latency is kept, a sub header should be added such as “important for gamers, lower is better”.
- Mediacom notes that Google Fiber has announced that they will be launching 5 & 8 gig in some key markets and in the announcements, they talk about latency and describe it as “real time” data – Mediacom feels that id we discuss it those terms it may resonate more with consumers. CTAM notes that we could add a link that further explains latency.
- Cox notes that a green checkmark should be added to Cable Broadband to show as “winner”.
- Mediacom notes they like the gauge better, but the font is small.
- MCTV prefers option or 1 or 2 because of the grid format.
- Cox agrees with MCTV.
- Mediacom notes the 3rd option could work if the bars were changed to vertical so they could be put in a grid format.
- CTAM notes that colors such as Red, Yellow, Green can also be used to give visual context.
- Cox notes upload speeds should be listed as 30-50 Mbps for Cable Broadband.
- MCTV notes it is important to add a link to “Refer to your provider for details” added for consumers – to cover specific information. CTAM notes a link can be added that states “For specific offers and tiers – click here” and that link will go directly to the MSO provider’s buy flow. CTAM can also add a link to the speed test and a checklist widget that lists how much speed a consumer needs based on number of devices they have.
- CTAM notes that once the site has migrated to Kentico, CTAM can optimize SEO and begin testing paid search.

# Call Notes: October 28, 2022
# Subject: CTAM 5G Internet Messaging Working Group Call

## Welcome/Roll Call

Call Attendees:

Armstrong – Craig Marzullo
Cable One –David Ballew
Cox – Wendy Rosen
MCTV – Katherine Gessner
CTAM – Mark Snow, Renee Harris

## Review MSO 5G Pages

Please see below links for MSO pages combating 5G:

| | |
|---|---|
| Charter | https://www.spectrum.com/resources/internet-wifi/the-truth-about-5g-home-internet |
| Comcast | https://www.xfinity.com/hub/mobile/what-is-5g |
| Cox | https://www.cox.com/residential/internet/cox-internet-vs-5g-home-internet.html |

These links will be included on CTAM's factsabout5g.com website. The more MSO that can do this the better – they all help take up space in the search results for 5G Home Internet terms.

Questions + Comments from the group

- For MSOs that have launched 5G pages, how are those pages situated on your site map and how are the pages presented? Are they hoping consumers find it organically or are the pages promoted with paid search?
    - CTAM will ask the digital teams that CTAM works for details on this.
- Cable One is working on adding a page on 5G to their site.

## Review updated factsabout5g.com Website

Please visit https://factsabout5g.com to view the site and provide suggestions for continued improvement.

CTAM has made the following updates:

- The new speed comparison infographic has been added to the site after input from MSOs on our last call
- There have been updates that make it clear that the "G" in 5G is for generation and not gig
- The Latency infographic has been added along with a definition of the term in consumer-friendly language
- 5G Pros & Cons section has been updated and made more consumer-friendly

Group Discussion

- Cox has a new spot combating 5G coming out. CTAM will add the spot to the factsabout5G website when once it goes live
- CTAM will create and share an SEO Tracker to chart how we are doing over time

## Next Steps

The group agreed to cancel the November 11 call and reschedule for early December. Please be on the lookout for an updated invite.

## 3 ACP Working Group

In 2022, the CTAM ACP Working Group met bi-weekly to discuss ACP program details, share experiences and best practices.

Key accomplishments include:

- National digital media and print/radio/digital newspaper campaign to support the awareness of ACP.
- ACP awareness tracking in the quarterly HarrisX TCS study – began low and grew throughout 2022.
- The group discussed issues and best practices on the following topics:
    - How to interpret and implement FCC usage rules
    - How to integrate with the NLAD/FCC APIs
    - Best practices for making the required ACP notices to consumers
    - Handling annual recertification of ACP subscribers
    - Best approaches to marketing ACP to consumers
    - How MSOs are handling bad debt
    - How to handle employee training and who needs RAD IDs
    - Best practices for handling ACP non-pays; downgrading broadband, suspension of non-internet services, etc.

## 3 Rural and Low Income Broadband Working Group

# Call Notes: August 15, 2022
# Subject: CTAM Rural + Low Income Broadband Working Group Call

### Welcome/Introductions

Call Attendees:

Altice – Dan Johnson, Prasanna Thoguluva Santharam
Armstrong – Andrea Lucas
Charter – Jen Rocco, Meghan Dering
Comcast – Adrienne Simpson, Dana McFarland
Cox – Joel Frost, Ilene Albert
MCTV – Elizabeth Kwolek
Mediacom – Chris Lord
CTAM – Mark Snow, Renee Harris

### Purpose of Group / Scope / Agreement on Output

As per the CTAM Co-op Board of Directors, the purpose of the group is to help the industry better understand how to market to the low income and rural markets.

The work product of this group will be:

1. Curated best practices and marketing examples of what works and does not work when marketing rural and low-income markets
2. Insights/research on these segments gathered from existing sharable work done by the MSOs, external sources (syndicated primary research from vendors), and potentially new work by CTAM.

These outputs will be shared as they are created and then gathered as a final work product into a playbook stored on the CTAM Knowledge Portal.

### Group Discussion

- The group would like to discover new ways to market to the rural and low-income segments.
- The group agreed to focus on the rural segment first and then low-income.

**What is the biggest barrier to reaching the rural market?**

- Armstrong noted they saw a trend in January/February where their highest tier messaging was suddenly not getting the same response rate as prior efforts. As they watched the trend, they further noticed that their lowest tier offers were now producing a better response in the rural market. Armstrong also noted their rural markets had more churn. Armstrong then decided to switch messaging to their lowest offers to better target this group.
- Altice notes that the wireless/mobile adaptability is changing for the better in rural markets so MSOs who offer fixed and wireless have more opportunity to message this group.
- CTAM notes that GCI, the dominant provider of mobile and cable in Alaska, has begun offering their mobile and broadband as a single price point and have found their broadband growth rates have fared better than the national MSO average.
- Cox noted they completed research for the group that is analyzing the edge of their network and found that in a 30-mile radius of edge of the network, 80% of households were familiar with Cox and the 30%

were previous Cox customers– this gave their team confidence that they were not starting from scratch when messaging.

Regarding research and insights, CTAM would like to understand what work has been done (that is sharable). To that end, CTAM will reach out to the MSOs individually to include the research representative for that MSO on our MSO Research Working Group to identify and gather the sharable findings. Once we identify any blind spots, we all want to fill in, we can decide what (if any) new work CTAM might do on behalf of the group to further our understanding of these segments.

**Cadence / Next Steps**

The group agreed to monthly calls starting in September with the structure as follows:

- September + October 2022 – Rural Focus
- November 2022 + January 2023 – Low Income Focus

CTAM will send a call poll to find the best dates for the calls and will be in touch to determine an agenda for our next call.

Please contact Mark Snow or Renee Harris at CTAM with any questions or thoughts.

# Call Notes: September 13, 2022
# Subject: CTAM Rural + Low Income Broadband Working Group Call

## Welcome/Introductions

Call Attendees:

Altice – Dan Johnson, Prasanna Thoguluva Santharam
Armstrong – Andrea Lucas
Charter – Zoe Santo, Meghan Dering
Cox – Joel Frost
MCTV – Elizabeth Kwolek
Mediacom – Chris Lord
Sparklight – Varn Chavez
CTAM – Mark Snow, Renee Harris, Deepa Venkataraman, Romina Valerio

## What do we know? (Rural Messaging Best Practices + Existing Research)

This discussion will focus on the rural part of this effort; future meetings in November and January will tackle low-income.

The goal of the group is to discuss messaging best practices and how to approach the rural market.

**Cox** shared some of their findings from a single study earlier this year with a very targeted sample just outside of their footprint. Note: only one-third of this sample self-identified as 'rural.'

Summary of Cox Findings:

- Brand familiarity was very high. 80% very/somewhat familiar
- Most have home internet and most on lower speeds
    - About 40% with DSL or satellite
    - Over half self-report under 100mbps
- Many are dissatisfied with their current offering or feel stuck with their provider and would not recommend their provider
- Affordability and value will be important, many households feel the price they pay for lower speeds internet is expensive. About 40% very/somewhat expensive
- Expectation that Cox would offer better service and price. Better value (speed/reliability/network)
- Cox did not test specific messages among Rural targets. However, even the general facts gleaned from this research would suggest that:
    1. Touting superior speed and reliability vs. competition can attract eager adopters
    2. Educating on fiber in network may sway those on the fence
    3. Educate on lower-end tiers and affordability assistance programs may help sway resisters
    4. Educating with compare/contrast on internet options will be appreciated
    5. Providing price assurances will be key

Questions for Cox:

- Prasanna from Altice asked if the Cox study had any findings on mobile only vs home internet.
    - Cox stated that they did not isolate mobile only, the study focused on internet users. Cox did find that mobile-only is higher in the rural space, 20% don't subscribe to home internet services.
- Andrea from Armstrong asked about the number of pieces that were sent out.
    - Cox stated that they sent out direct mail to 30,000 and received back 334 responses
- Cox mentioned that rural areas are willing to pay more for better service
- MCTV also found that their rural areas are already paying a higher cellular price, but they would be willing to pay more for better/reliable services.

CTAM shared the attached *Internet Technology Demographic document* from the recent quarterly HarrisX TCS Study. It usually has 25,000 households in each quarterly sample.

- Highlights include:
    - Younger consumers in the rural market are taking Fixed wireless more
    - Older consumers in the rural market prefer DSL
    - Income, age, and product type don't track the same as they do in urban markets
    - Cable broadband penetration is at its peak for those with an income of $50k-$100k
    - Fiber-optic is at its peak for those with an income of $100K+
    - No internet is highest for those with an income of less than $15K

**What do others know? (Lessons from outside of the industry + academia)**

- CTAM will send Johnathan Chaplin white paper that discusses the broadband slowdown for cable and what is to blame (moving slowdowns, fiber, 5G Home)
- CTAM suggests reading the *USDA Rural America at a Glance 2021 Edition*: https://www.ers.usda.gov/webdocs/publications/102576/eib-230.pdf?v=6462.7
    - It is a study of the rural market overall with a section on broadband, pages 10-14.

**What are the gaps we need to fill?**

MSOs on the call expressed they would like to know more about:

- Cox is experiencing a decrease in new build-occupancy households signing up for services. They suspect that individuals are moving into these new buildings and forgoing internet for mobile-only or other fixed wireless options. They would like to tackle this issue and find additional information.
    - CTAM will go back to HarrisX to see if this question can be answered.
- What does 5G ramp-up in the rural market look like?
- Any competitive knowledge of the rural activation of what fixed wireless looks like (external antennae, etc.) compared to suburban/urban offered that does not have the intrusive equipment?
- Is 5G service as good/better in rural markets?
- Please note: CTAM can conduct message testing for the Co-op.

Please reach out to CTAM with any additional thoughts or suggestions.

## Presentation: *NSR Autumn for Broadband*

# Call Notes: October 11, 2022
# Subject: CTAM Rural + Low Income Broadband Working Group Call

## Welcome/Roll Call

Call Attendees:

IEN Team: Anne Cowan, Sean Ryan, Tim Sherno
Altice – Dan Johnson, Prasanna Thoguluva Santharam
Charter – Zoe Santo, Meghan Dering, Lauren Sematska
MCTV – Elizabeth Kwolek
Sparklight – Varn Chavez
CTAM – Mark Snow, Renee Harris, Romina Valerio

## Introduction to and discussion with IEN, CTAM's partner on better understanding the rural audiences

Mark welcomed the Informed Engagement Network Team: Anne Cowan & Sean Ryan & Tim Sherno

- They focus on audience intelligence with an investigative journalistic approach toward truth-telling and fact-finding.
- Anne and Sean discussed how they will be helping this group better understand the rural audience and conduct an audience intelligence analysis.

Defining archetypical rural areas to study

- One recommendation is 3 counties in southeastern Ohio that are covered by Comcast, Charter, MCTV, and Sparklight.
- CTAM would like to know additional areas each MSO would like to study.

Sean R. shared *Rural Initial Look* Presentation. Brief Summary:

- IEN is looking to find trends and quantify the conversations as it relates to rural broadband internet.
    - Conversations include frustration with the internet and customers looking to find new ways to get internet.
    - We are focusing on the crossover of rural as it relates to broadband- what is the appeal and hesitations.
- Some terminology around broadband includes performance terms such as *Reliability, Speed, Connectivity, and Downtime*. Some user terms include *Working from home, Virtual Learning, and Connected Devices.*
- The first look shows that there is no shortage of conversations, there are tons of mentions around rural and broadband. See **Figure 1.0**


- A spike occurred on Aug 21 when Beto O'Rourke tweeted about broadband prices going up. These types of occurrences will be filtered out.
- The most shared article was on private and public partnerships with The Hill.
    - The Collaboration that's connecting the unconnected by Henry Samueli. Published 9/24/2022
- CTAM stated that the IEN team can do similar studies on personas if we would like.
- Tim Sherno Stated that the IEN team approaches these studies as journalists more so than marketers. They will be able to drill down deeper to get answers.
- Sean stated that most conversations are about access, and a lot of it is politically driven. Some additional key themes found were on:
    - Rural expansion in areas that are more "rural" than our focus. If there are areas of interest that MSOs may want to explore the IEN team will be able to help
    - Speed/Connectivity/Reliability- The IEN team can also find the important factors that people are looking for when choosing a provider
    - Frustration with DSL
    - Hope for Starlink/Satellite/5G options
- Overall, IEN is looking for 3-4 examples markets.
- CTAM encourages MSOs to nominate areas or to think of areas in the next few days so the IEN team can begin their research.
    - Sparklight mentioned that there is an area around Boise that may qualify. Varn C. will reach out to his team to get specifics.

## Discussion on fielding a rapid, impactful, quantitative research study that sharpens our insights

- CTAM has also worked with HarrisX who can do agile-style research call a "HOP" Harris Overnight Poll. They provide market research answers quickly. If the group would like to do this, we can acquire immediate answers. The LeadShare project can fund this.

## Ultimate outcome desired for this Working Group: a brief on each persona with a recommended messaging framework?

- CTAM asked the working group to think about the desired end work product.
- CTAM believes we may end up developing personas instead of markets. People as archetypes: could be affluent, rural, etc... and have a messaging framework that describes the best way to approach these different groups.

# Call Notes: November 8, 2022
# Subject: CTAM Rural + Low Income Broadband Working Group Call

## Welcome/Roll Call

Call Attendees:

HarrisX: Kamalini Ganguly, Sidharth Addanki
Altice – Dan Johnson,
Armstrong – Andrea Lucas
Charter – Zoe Santo, Meghan Dering, Lauren Semataska
Comcast- Stephanie Pearlman
MCTV – Elizabeth Kwolek
CTAM – Mark Snow, Renee Harris, Romina Valerio

## Introduction, Project Status Updates and Analysis of Rural New Build

Mark welcomed everyone on the call and reviewed the meeting agenda.

Mark pointed out that today's call was scheduled to discuss low-income, however, rural will need additional time and will be the primary focus of today's call.

- In previous conversations with MCTV and Sparklight, three counties around SE Ohio and Boise were suggested for a study.
- Based on discussions and feedback from the working group, CTAM has decided to plot all the rural homes passed that have been added to networks in the last 24 months where density is below 1,000 sq mile. This will give us hot spots for new rural builds and where they are located.
- CTAM has spoken to a few MSOs 1:1 and will continue to have conversations. CTAM has already spoken to or has calls scheduled with MCTV, Mediacom, Sparklight, and Cox. Other MSOs should notify CTAM if they are interested in having them speak with those in charge of the rural spaces.

Overall, CTAM is still gathering markets, interviews, and conducting analytical exercises that will allow us to pinpoint the next steps. Results will then unlock the AI work that is being done with the Informed Engagement Network Team. They focus on audience intelligence with an investigative journalistic approach toward truth-telling and fact-finding.

## Outcomes – personas, message framework

- The goal is to look at the hot spots and understand which competitors are present, get an understanding of the various kinds of rural America (very rural farmland, micropolitan areas, exurban bedroom communities), and then determine the segments and messaging framework.
- Mark outlined the project scope which includes: The homes pass analysis exercise, identifying hot spots, interviewing with MSOs, including the IEN team on the qualitative phase of the exercise, and a primary research exercise with HarrisX that would put statistical significance to what we are finding.
    - No MSOs provided additional comment or changes on the proposed scope, CTAM will proceed as planned.

## Discussion on primary research project discussion

- Mark stated that this project is fully funded and CTAM will be doing these exercises for everyone's collective behalf
- To make sure there isn't a duplication of efforts CTAM asked MSOs if they are doing any additional work in rural space now.

    - Armstrong mentioned that they are not doing any segmentation since most of their area is rural anyways. They are building out in areas that have our desired demographic but nothing specific.
    - No additional MSOs provided feedback.
- HarrisX asked the group to confirm which areas we are interested in studying, CTAM stated that looking at clusters of recent builds in rural areas will allow us to select specific ZIP Codes that we want to study.
- Mark proposed that this group meet once more in early December to have a 30min touch point and Pivot to Low income in Q1, 2023.

## Call Notes: December 6, 2022
## Subject: CTAM Rural + Low Income Broadband Working Group Call

### Welcome/Roll Call

Call Attendees:

Altice – Prasanna Thoguluva Santharam
Charter – Zoe Santo
Charter – Jennifer Rocco
Cox – Joel Frost
MCTV – Elizabeth Kwolek
Sparklight – Varn Chavez
CTAM – Mark Snow, Renee Harris

### Review of selected study markets so far

CTAM has home passed data which have been added to footprints in the last 24 months and has plotted areas where the density of housing is less than 225 homes a mile to identify areas of rural build.

CTAM would like to speak with some of the field service/market expansion leaders / points of contact at a few of the MSOs to get a better feel for the realities on the ground. This will assist in the overall effort to characterize what is happening and how marketing can adapt.

Cox noted that they have a group that is centered around market expansion, and they will be fielding new research soon that can possibly be shared with the group. The focus will be:

- To get an immediate sense in markets where their expansion has been launched by interviewing on the ground agents to get their perspective. This will be done in December.
- In January they will roll out a multi-phase interview of consumers including targeted postcard mailings.

### Summarized learning from MSO 1-1s

CTAM has spoken with a few MSOs to discuss rural analysis in more detail. One MSO was able to provide local market insights which is very helpful to the analysis.

Out of the conversations, two learning points became clear:

1. The importance of being first in a rural area; and
2. The importance of having relationships with public affairs and government relations.

## Status of CTAM's work: Audience Intelligence, Data Analysis, Primary Research

CTAM's audience intelligence work is currently underway. The goal of the work will be to find 8-10 archetype rural areas to see if there are any common threads.

CTAM will be doing an analytical exercise with the HarrisX Q3 TCS Study that will address the most rural third of the U.S. that will analyze how their broadband adoption, purchase behaviors, intents, and loyalty to their current provider is different (or not) from the national norm.

CTAM could also complete a quantitative component of research after the analytical exercise if it makes sense to do so (early 2023).

**Questions from the group**

*Is this working group focused on rural/low-income market expansion or just looking at markets in general whether serviced or not and how they are different from suburban/urban markets?*

> The original mandate of the group was to focus on rural areas and how they behave differently regarding the adoption curve. The question to be asked is "Is Rural different?" and if it is, how is it different and what can we do to change consumers' minds about it?

## Actions / Next Steps

- CTAM asks MSOs to provide a contact that can further discuss market expansion and field service. Mark will reach out to request these contacts.

# Call Notes: March 3, 2022
# Subject: CTAM Sales Leadership Kickoff Call

## Welcome, Introductions + 2022 Objective

Call Attendees:

Armstrong – Peter Grewar, Director of Sales and Customer Relations
Comcast – Jenny Hartey, Senior Manager, National Field Sales Operations
Cox – Boone Hand, Director, Inbound Sales
Mediacom – David McNaughton, SVP, Marketing & Consumer Services
Shaw – Pat Button, SVP, Sales & Distribution
CTAM – Deepa Venkataraman + Renee Harris

For 2022, the objective for CTAM Sales Leadership team will be to identify and discuss current challenges and opportunities across sales channels, as well as discuss best practices.

## MSO Current Status + Initiatives

Mediacom

From a sales and marketing standpoint, ACP (Affordable Connectivity Program) is the newest program and a big focus for Mediacom. Mediacom is working to message ACP in all channels but the challenge that they are facing with the program is the fact that consumers must verify their eligibility through a government website and then come back to Mediacom, once verified, to proceed with signing up.

Mediacom closed their Direct Sales channel, so they are focused on ecommerce, inbound sales and are working to develop retail stores.

Cox

Cox's focus is on ACP as well as identifying how to solidify their base and reduce churn.

Cox is still working on how to get staff back into the office in a hybrid fashion. Activity is low on their disconnect side, but there are concerns about low connect activity. Cox is analyzing the marketplace to try to determine how the second half of the year may look.

Comcast

Comcast also noted that ACP is a very big topic for them and how to integrate the income-constrained market with the previous strategy for high-value targets. They are also focused on leading the "digital first" experience and determining how it relates to their field channels.

Shaw

There is an ACP equivalent on the Canadian side. Shaw is being purchased by Rogers so there will be a second opportunity to delve into the program. Just like ACP, the Canadian program will require customers to be verified

prior to signing up for service (their main competitor is more successful). The program is done all by an inbound channel, with a similar validation delay to the US.

Retail has slowed dramatically for Shaw. They invested heavily in retail, and it was successful, but the pandemic has caused the slow down. Shaw has found success in targeted Direct Mail and conversion rates are strong, in the new customer acquisition space (specifically to areas targeted by Fiber).

Armstrong

ACP is also a focus for Armstrong. 1st quarter fiscal year was good for connects, but 2nd quarter has been challenging. Former DSL providers have expanded with fiber. Armstrong is looking to improve their performance in their inbound sales teams and is determining what improvements can be made.

## Call Center Sell-in Conversion Rates

Shaw

For Direct mail data, Shaw is getting call responses on average 33 bps. 10% response rate for direct mail which went to vacant home. Of those calls the conversion rate is 5%. For the Speed Advantage area with fiber coming, the call response is .27% and conversion is .74%. Overall conversion is .3%

Shaw's call center conversion rate is around 22%. Shaw noted the since COVID their chat assisted conversion rates are the best by any channel.

Chat-assisted conversion in the web space is very successful.

Armstrong

Armstrong's conversion rates have been between 30-35% since Nov 2021 – Feb 2022. They use a proactive chat window (staffed by retention team) on the site, with customers needing to call into the sales queue to place orders.

Mediacom

Mediacom notes there are many factors to consider when sharing conversion rates. Move activity is down; consumers are not switching, just to save money as in the past.

Mediacom's struggle is getting the calls – when they get calls, they close about 40-42% and has been constant – ACP has interfered with that number due to the call backs needed. Mediacom noted they have a "sales routing representative" – when a customer calls into their sales queue, they have a junior staff member verify the customer address and confirm they are indeed a new customer then they are routed to a Sales representative – adding this practice has assisted in their close rates, and in retaining lower-performing employees.

Cox

Cox's conversion rates are solid. Cox would actually like to see their conversion rates drop slightly – they have a lot of pure intent callers but they would like to see more shoppers so they can have conversations to sell. Conversion rate on chat is healthy.

## Next Steps / Actions

CTAM will send the group an MSO Sales Channel Leadership Roster to review and edit so that the group has contact information for their peers within the CTAM Co-op. Once complete, CTAM will distribute a final copy to the group.

Call cadence: The group will meet quarterly with specific topics to be determined at least two weeks prior to the call.

Possible next call agenda items:

- Commission plans/structure
- Benchmarking and success criteria (with defined Sales Channels)

Renee Harris will poll the group to schedule the quarterly calls for the year.

Please feel free to send Deepa or Renee any additional topics of interest.

# Call Notes: September 15, 2022
# Subject: CTAM Sales Leadership Q3 Call

## Welcome / Roll Call

Call Attendees:

Altice – Dan Ferrara
Armstrong – Peter Grewar
Cable One – Jim Obermeyer
Mediacom – David McNaughton, Matthew Waystout, Melanie McKean
CTAM – Deepa Venkataraman + Renee Harris

## Coaching & Training for different sales channels

*What are MSOs doing as far as coaching and training?*

Altice

Altice has made changes to how they run the business since the pandemic. For Sales & Retention calls centers they have gone to a hybrid format – 25% of the team is in the office at all times. New hires must be in the office for the first few months until they hit a certain threshold and are hitting the right productivity numbers; then they are allowed to do three weeks remote and one week in office. Although Altice offers a hybrid work schedule, they still must hire folks who lie close to the office as they want them to come in one week per month so they can engage in face-to-face coaching and mentoring. All coaching is held in house without 3rd party vendors.

For field teams, prior to the pandemic, the teams checked in five days per week; now check ins are once or twice a week in person, except for new hires who come to the office for the first couple of months.

For Retail, Altice has expanded their retails spaces and are up to 114 stores now. Training is held in person with continued on-the-job training.

*Regarding challenges of coaching, recruiting and retention of employees during the pandemic, are there any tactics that have been reinstituted or new approaches added?*

Altice increased their starting salaries across the country to keep up with recruiting and went to a softer performance plan – minimum performance standards were temporary lifted. However, Altice is now getting back to their normal performance plan. To some extent, KPIs changed, for instance, door to door sales reps now have a Mon-Fri schedule and they also are given a more lenient six-month ramp up to deliver sales.

Mediacom

Mediacom requires training to be in-house for the first three months then are moved to the floor and employees are given a work from home station. Mediacom also has a policy that requires 25% of employees in office at all times and works off a rotating schedule. Employees are given the choice one day a week or one week in office. Continued training is offered virtually with additional training offered by supervisors. Staff is also coached every week and supervisors are rotated on a schedule.

Mediacom has also offered an “all hands in” events such as barbecues or lunches as an incentive for employees.

Armstrong

Armstrong has about 60% of their inbound team in the office, 40% are remote. They just implemented a performance-based rotation where top performing agents have the option to work from home on a quarterly basis. Armstrong will continue to look at incentives to offer employees.

In terms of coaching. Armstrong has implemented an accountability program where agents are held accountable for their performance – if they are not performing, they are put on a mandatory coaching plan for one month which includes weekly 30 minutes of 1:1 coaching time with their supervisor and 30 minutes of 1:1 with their Sales & Marketing Trainer.

Armstrong's biggest challenge in training is due to being understaffed which makes it difficult to take reps off the phones for training. They do weekly huddles which are offered both virtually and live.

Armstrong handles coaching internally but did engage a 3rd party for a virtual 4-day training program with a 4-week, 1 hour per week, follow up module program and are looking at expanding this program.

Cable one

Cable One does most of their training in house but are looking at vendors to work with the entire inbound sales center.

Cable One does not have direct sales on the residential side, their front counter space is not retail but more customer service transactions. Their call centers are 100% remote, so they want to get better at virtual coaching.

Recruiting is also done 100% in-house. Because of the slow market, they have not had a lot of attrition or a need to put more people on the phones so there has not been a lot of recruiting as of late.

Cable One reorganized their inbound sales centers by adding more managers and supervisors to provide better virtual 1:1 coaching and attention. They also recently launched transactional NPS for that channel – each customer gets a survey after a sale or non-sale and scores are tracked in terms of detractors and comments and that has helped.

Agents are on commission, but it's paid nearly next to nothing on video or phone it's heavily loaded on HSD – close rate, revenue and upsell to higher tiers.

Questions for Cable One

*Do you think your low attrition is largely because your agents are 100% work from home?*

- Absolutely. With fuel prices high and the ability for reps to get on the phones quickly, it's been a plus for Cable One. One of things they grapple with now is the use of sick time – people working from home are working when they are sick now. One of their policies was to pay sick time to a point; but they are not doing that this year so they have people wanting to use the sick time because they now will not be paid for it but that's just one by product. The other is that people need to not work when they are sick – employees need to take the time to rest and recover.

*Do employees have the option to come into the office or is everyone remote and office set ups have been removed?*

- If an employee wants to come in, they can; but not one of their 144 employees have chosen to come in.

*Regarding commission structures, any major shifts?*

Altice

Altice raised based salaries slightly and updated most of their commission plans to be new customer centric and simplified plans to be straightforward to focus on new customer and revenue.

Armstrong

Armstrong has maintained the commission structure they have had but spent the last eight months trying to revise their inbound sales structure to better reflect the new environment with focus on Internet. Prior to the pandemic their retention team was on variable pay but that didn't work out well; so they were moved back to hourly-based pay with a small incentive pool – Armstrong is now considering whether it's time to adjust this further for their retention agents.

Question from Armstrong - *How many of the MSOs still have a separate sales team?*

- Mediacom for the cell side they have SRRs – Sales Routing Representatives – they screen the calls for sales, so they get good leads –so they still have individual departments. Mediacom made a commission change for their retention team – they de-emphasized the video product and the team focused on Internet and home phone for their commission structure.
- Altice still has two separate teams – inbound and retention. They have a new group that handles mobile sales exclusively.
- Cable One is separate as well.

*Is there any divide in the retail space based on expertise and strengths of reps?*

- Altice's retail team are universal agents – all agents trained on all aspects of customers experience.
- Armstrong doesn't really have retail spaces; they are more customer service spaces.
- Mediacom doesn't have true retail spaces either, their retail locations are more front counter transactions and are not designed to sell to new customers

## Best practices on disconnect phone scripting (keeping future win-back in mind)

*What is optimal phone scripting for agents dealing with disconnecting customers?*

Armstrong

Armstrong has new competitors in their footprints that are having success. Most of the customers that call in to disconnect have already been installed with their new provider. They are still struggling with this and are open to any suggestions to how better to approach customers in this position. One tweak Armstrong implemented after listening to one of their recorded calls for QC: the customer stated they were already installed with their new provider, and the Armstrong rep pointed out that Armstrong was still installed at their residence as well and asked what they could so keep them as a customer. Armstrong would like to have more agents respond in this manner and expand on what they can offer, versus just accepting a disconnect.

Mediacom

Mediacom is experiencing the same struggles and have found that customers are already connected to their new provider which makes it challenging to win back. They are asking their teams to ask customers to ensure their new

service is working before they make their decision to disconnect. They are trying to ensure their team offers the most aggressive offer to the customer to stay with Mediacom, so the customer has a price point in their minds.
Altice

Altice is also finding there are a lot of price discussions and the calls that are service issues are the harder ones to win back. For customers that just want a discount, Altice's care teams are allowed to give some credits and retention offers. They find that customers who get to retention after multiple calls to call, are almost impossible to save. Giving Care the options to save the easier calls that are just looking for disconnects allows the queue to be cleared so that real retention calls are attended to.

## Next Steps / Actions

Our final call of the year is scheduled for November 10, please feel free to send Deepa or Renee any topics of interest.

# Call Notes: November 10, 2022
# Subject: CTAM Sales Leadership Q4 Call

## Welcome / Roll Call

Altice – Dan Ferrara
Armstrong – Peter Grewar
Mediacom – David McNaughton
CTAM – Deepa Venkataraman + Renee Harris

## Inside Sales Compensation Structures

Armstrong

Armstrong has been struggling to revise their current compensation structure for their inside sales groups. The current plan is a mix of hourly rate base and commission based on targeted attainment, but they have been looking at ways to move away from this structure. They are looking at a higher base and a pool to incentivize agents. The problem is how incentives are applied – how do they incentivize the middle and lower performing agents, so they just do not rely on their base. Armstrong is interested in understanding how other companies are structuring their inside teams.

Currently about 30-40% of Armstrong's retention team is remote. They have created a performance-based rotation based on metrics, allowing agents to work from home for 3 months, with continued remote work based on maintaining performance.

Armstrong's call centers, because of their size, do not have the scale to move reps around often but they have successfully moved some lower performers to care. They prioritize internet sales.

Armstrong's compensation package is 60% variable and 40% base.

Mediacom

Mediacom has had two fundamental shifts in inside sales. They have shifted from PSUs to Internet and Internet speeds which are more valuable. The second is the high value of the call to inside sales: they want to ensure reps spend time selling, so a critical piece is to have a multiplier based on sales/ close rate as the cost of a missed opportunity is greater than anything else. Mediacom would rather have reps taking fewer calls and possibly be less sufficient but ensuring every possible sale from every call is pursued. One issue they have is how much to pay a high performer vs an average performer.

Most of Mediacom's call centers have multiple functions – not all have sales or retention but over the last couple years almost all functions have moved to virtual, so reps can be moved around, if needed.

Mediacom's compensation package is 60% variable 40% base.

Altice

Altice is on a commission pool, and it has a safety net to ensure they are at budget every month. Altice agrees it's tough to set goals for reps because reps are judged against their peers each month. Altice feels it's important to have updated dashboards throughout the month. Their plans are also based around close rates and the secondary piece is revenue.

Altice's compensation package is 50% base and 50% variable.

## Hiring and Managing Contract Door to Door Sales

Mediacom

Mediacom had a team of 150 Direct sales reps prior to the pandemic with 5 FTE door to doors sales. However, their Direct Sales department was terminated after the pandemic. Mediacom would now like to look into hiring contract door to door sales and would like to know if any MSOs have any information or experiences to share.

Mediacom is launching a new area in Dewy, IL and will be sending marketing specialists (not door-to-door sales reps) to reach out to consumers who will likely return with insights, not necessarily sales.

Mediacom notes to be careful when sending door to door sales to MDUs as the value for the business does not match the rate paid to the rep, and it is essentially move activity

Mediacom has had success with college student hires and has also heard about success with Mormon sales reps in Utah.

Altice

Altice had a push to grow their door to sales teams this year so did turn to vendors. They did hire a vendor, Sales Focus, Inc, to assist but just terminated them as the reps that were hired did not work out – productivity was very low and there was a very high turnover rate.

Altice recently spoke with 2020 Companies who Verizon also used, but the vendor backed out. Altice has not been successful with contract door-to-door sales.

There is a renewed opportunity for direct sales in new build areas.

Armstrong

Armstrong has hired 3rd party contract door to door sales over the years, but it has always ended badly. They tried to hire internal door to door sales but that has not worked out well.

Armstrong notes they had a contractor – a gentleman who was brought in by Dave Wittmann who was working as a contractor and hired his friends and family to assist in door-to-door sales for mostly new builds. They generated great sales. Unfortunately, the gentleman who was leading this contractor effort passed away and they have not hired a new contractor. So, one idea is to hire a small-scale contractor and pay them a retainer and/or other incentives.

Armstrong has had companies and individuals who are not interested in working for platform programs they offer but are interested in working with larger MSOs – Armstrong will share this information with MSOs on the call.

Armstrong notes that their security company hired college students who worked through the summer and were very successful.

## Next Steps / Actions

The group decided they would like to continue into 2023 but would like to define the topics first then define the MSO members to participate via the CTAM Co-op Board. There was some interest in CTAM listening in to call center calls for best practices (similar to what was done in the past to ensure compliance with SmartMove Hotline usage).

The group noted the following topics they would like to address:

- Diversity in hiring door to door
- How to incentivize existing agents to learn a second language
- Continued periodic exploration of compensation structures.

If the group has any topics, they would like to tackle in 2023, please reach out to Deepa or Renee.

CTAM will be in contact in the coming weeks to share details about 2023 objectives and scheduling a kickoff call.