

Industry Note

4Q15 Cable Trends Review

Cable Keeps Beating, But Long-term Estimates Aren't Going Up

Research

Jonathan Chaplin

212 921 9876

jonathan.chaplin@newstreetresearch.com

Spencer Kurn

212 921 2067

spencer.kurn@newstreetresearch.com

Vivek Stalam

212 921 2079

vivek.stalam@newstreetresearch.com

Sales

Zach Monsma

212 921 7729

zach.monsma@newstreetresearch.com

Ethan Lacy

212 921 4925

ethan.lacy@newstreetresearch.com

- **What is new:** We focus on two things in this report: support for our overarching bullish thesis on the group, and; emerging fears around set top box (STB) regulation. On the first, we make a strong case for expectations being too low. As the companies have been beating estimates, long-term expectations haven't been rising. On the second, we make the case that STB regulation is a non-issue. CHTR / TWC remains our top pick.
- **Thesis impact:** Our thesis is predicated on Cable companies beating estimates on: 1) broadband and video subs; 2) broadband ARPU; 3) enterprise, and; 4) wireless (there is nothing in estimates for wireless at present). In addition, we expect cable multiples to rise. We saw strong support for our thesis again this quarter with broadband and video adds beating estimates soundly; however, long-term estimates don't seem to be rising commensurately. Investors seem to be ignoring the shift taking place in the value of Cable businesses and they are overly concerned about threats. Over the past couple of quarters we have done what we can to dismiss the two most prevalent fears: over-the-top and broadband price regulation. In this report we tackle the most recent fear: STB regulation. We argue that STB revenue is just video revenue in disguise; if required, the industry would simply reclassify revenue, as the Wireless industry did during a similar transition in 2012. In addition, we show that Cable companies don't make money on boxes. Finally, we believe Cable companies have more to gain than to lose from integrating all content onto a single platform.
- **Stock calls:** CHTR / TWC is our top pick in the group (TWC is more compelling if CHTR is below \$191 at the time of closing). We like CMCSA's cable business; however, we are more wary of NBCU. CVC is trading below the deal price and we expect the deal to close; however, downside in the event of deal failure make it less compelling than the other three.

Key Industry Trends

1. **Broadband Share Gains Accelerating:** Our Cable thesis rests on the view that Cable companies will see broadband penetration rise ~1200bps to ~55% over the next several years. Our long-term penetration forecast is well ahead of consensus and calls for an acceleration in broadband subscriber growth. We saw this play out in 4Q15 with Cable companies reporting better than expected and accelerating broadband adds.
2. **Broadband Pricing Poised To Rise:** The biggest push-back to our Cable thesis comes from investors who believe regulators, armed with Title II authority, will prevent Cable companies from properly monetizing broadband. We think this view is misguided: regulators have neither the desire nor the ability to regulate retail rates. Comcast is steadily expanding usage-based pricing to new markets. If the new pricing takes hold, and if there is no regulatory reaction, we expect ARPU growth to accelerate over time.
3. **OTT Pressures Continue; Cable Takes Share:** The traditional pay-tv market is shrinking and the pace of decline will likely accelerate as OTT offerings proliferate and improve. Cable should be largely immune from this pressure for two reasons: first, they should take share in a declining market helped by the pull-through effect from growing share in broadband. Second, and more importantly, we don't think Cable makes much money in pay-tv. The FCF they lose when a sub drops pay-tv service is more than offset by increased broadband ARPU from the loss of the bundling discount (hence the importance of the pricing point above).
4. **Cable Moves Closer To Wireless:** We expect Comcast to trial a WiFi-first mobile offering in the next 3-6 months, with a broader roll-out later this year. Our analysis suggests Comcast will make attractive margins even under current MVNO terms with Verizon. We think the MVNO will work as a market entry strategy but may not be an ideal long-term solution; we would expect Comcast to move to a deep MVNO or network sharing model, buy spectrum (at least in the 600MHz auction), or acquire a wireless carrier (TMUS) in time.
5. **Set Top Box Concerns Overblown:** Investors are concerned that the FCC's NPRM may put 11% of industry revenues at risk. We aren't concerned for three reasons: 1) STB revenue is just video revenue in disguise; 2) Cable companies don't make much money on boxes; and 3) We doubt there will be much demand for a box that is not supported by the cable company.

Investment Theses - Cable

CMCSA (BUY, TP: \$73, +25%): Our thesis focuses on the cable business: we think investors are underestimating long-term penetration rates for HSD and video; they are underestimating the re-pricing opportunity in HSD; they are underestimating the enterprise opportunity; and they are underestimating the wireless opportunity. While this is true for most cable companies, Comcast is one of the highest-quality operators in the industry with strong growth and a compelling capital return policy. Our \$73 price target assumes an 8x EV/OCF multiple applied to the cable business and 10x EV/OCF multiple applied to NBCU.

CHTR (BUY, TP: \$235, +28%): Charter is our top pick because, in addition to the drivers listed above for CMCSA, we believe TWC merger synergies will be well above consensus expectations and guidance with further deals likely to follow this one. In addition, CHTR benefits from not having exposure to content where multiples have contracted almost two turns. Finally, with greater financial leverage, CHTR should benefit more as Cable multiples rise. Our \$235 price target is derived based on our deal odds of 85%, a pro forma target of \$250 (37% upside) and a standalone target of \$150.

TWC (BUY, TP: \$225, +16%): TWC is an alternate way to invest in New CHTR, and investors preference for TWC vs. CHTR will hinge on the odds they ascribe to the deal closing and the price of CHTR at the time of close. At 85% odds of closing, and assuming the \$100 in cash consideration is immediately reinvested in New CHTR stock, CHTR would have to be trading below \$191 for TWC to be more compelling. Our \$228 price target is based on a pro forma value of \$235 (85% odds), an Altice bid of \$200 in the event of failure (5% odds), and a standalone value of \$154 (10% odds).

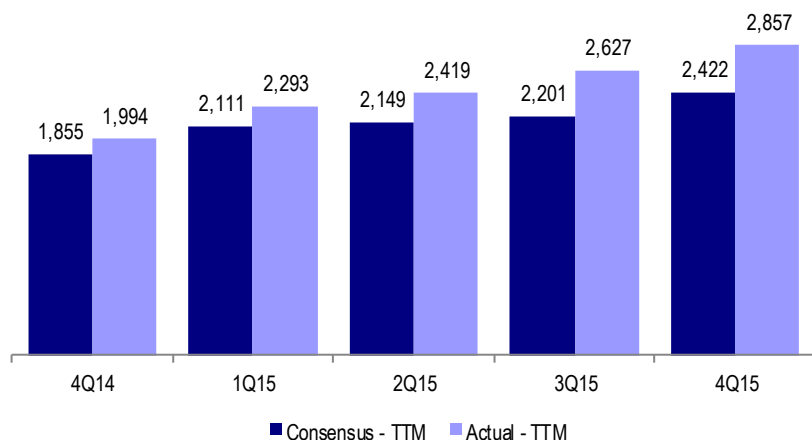
CVC (NEUTRAL, TP: \$34.9, +5%): The spread has narrowed considerably over the last three months, from 18% in December 2015 to 5% today. Although the deal could face a stiff challenge from state and local authorities, we believe it will ultimately be approved. The issues that we have seen raised are all easily remedied with conditions and we think consumers are better off in an Altice deal with conditions than under the status quo. We believe Altice is committed to the deal; however, if they walk away we see downside to \$17 (\$15 standalone value plus \$2 break-up fee). Assuming a mid-2016 close, the market appears to be assuming ~95% odds of approval.

Results Keep Beating, But Long-Term Estimates Aren't Increasing

Despite the companies steadily beating expectations, consensus hasn't changed its long-term view; analysts appear to be assuming the same slowing growth from a slightly higher base each quarter. We think investors are missing the shift in utility of broadband that is driving households to adopt Cable broadband at an accelerating rate. At some point long-term estimates need to rise.

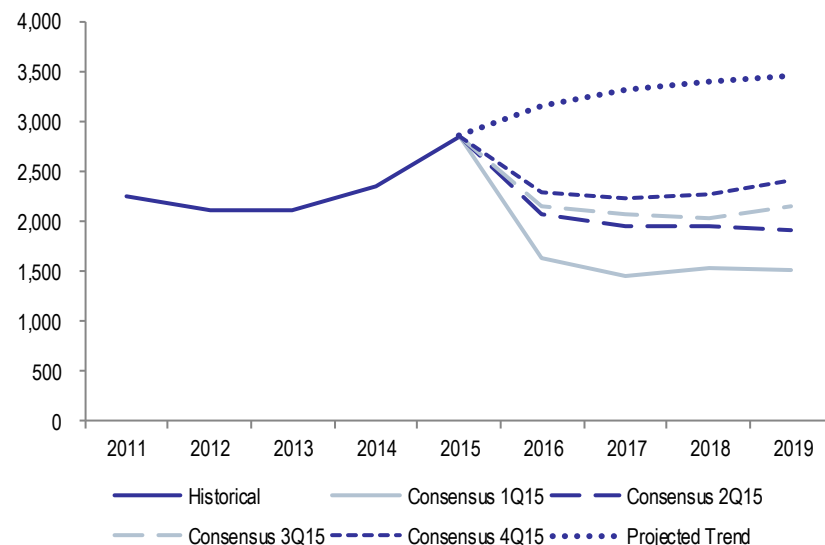
Cable Industry Broadband Net Adds

Households in '000



Consensus Industry Broadband Net Adds Estimates

Households in '000



Source: Company data, New Street Research estimates

Long-Term Estimates Are Way Too Low

Our 2016 estimates are modestly ahead of consensus for CHTR, CMCSA, and TWC; however, our long-term estimates are way ahead. To put this in perspective, our long-term UFCF estimates are 20-40% above consensus by 2020, with the difference stemming largely from broadband penetration and ARPU. Consensus stubbornly model fading growth despite the acceleration we have seen in recent quarters. We will walk through the source of the divergence in views in detail in the slides that follow.

CHTR	NSR	Cons.	Variance	Var. %
2016 Revenue	10,538	10,483	56	0.5%
Revenue Growth ('16-20)	8.1%	7.6%	0.5%	
2016 EBITDA	3,828	3,757	71	1.9%
EBITDA Growth ('16-20)	10.4%	7.8%	2.7%	
2016 UFCF	1,988	1,953	35	1.8%
UFCF Growth ('16-20)	18.1%	12.6%	5.6%	

CMCSA	NSR	Cons.	Variance	Var. %
2016 Revenue	80,681	78,835	1,847	2.3%
Revenue Growth ('16-20)	6.0%	4.6%	1.4%	
2016 EBITDA	26,708	26,256	452	1.7%
EBITDA Growth ('16-20)	7.9%	4.8%	3.1%	
2016 UFCF	17,564	17,182	382	2.2%
UFCF Growth ('16-20)	10.1%	6.2%	3.9%	

TWC	NSR	Cons.	Variance	Var. %
2016 Revenue	25,502	25,223	279	1.1%
Revenue Growth ('16-20)	7.9%	4.8%	3.0%	
2016 EBITDA	8,806	8,750	56	0.6%
EBITDA Growth ('16-20)	8.8%	3.9%	4.9%	
2016 UFCF	4,493	4,410	83	1.9%
UFCF Growth ('16-20)	16.5%	9.1%	7.3%	

CVC	NSR	Cons.	Variance	Var. %
2016 Revenue	6,542	6,611	(69)	-1.0%
Revenue Growth ('16-20)	0.2%	1.6%	-1.5%	
2016 EBITDA	1,793	1,834	(41)	-2.2%
EBITDA Growth ('16-20)	0.7%	3.6%	-3.0%	
2016 UFCF	911	1,006	(95)	-9.4%
UFCF Growth ('16-20)	1.7%	5.5%	-3.8%	

Source: Company data, New Street Research estimates

Section 1: Broadband Share Gains Accelerating

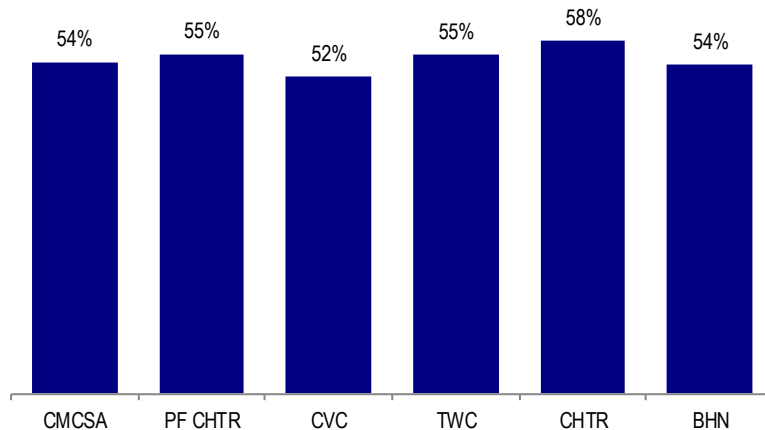
The core of our Cable thesis rests on the view that Cable companies will see broadband penetration rise ~1200bps to ~55% over the next several years. The penetration gains should be driven by the rising utility of the broadband connection and the increasing importance of speed on the one hand, and the superiority of the cable plant in the vast majority of the country on the other. Our long-term penetration forecast is well ahead of consensus and calls for an acceleration in broadband subscriber growth. We saw this play out in 4Q15 with broadband growth accelerating and beating expectations.

Cable Broadband Penetration Should Increase ~1200bps to 55%

Given the superiority of their plant, Cable companies should have dominant broadband share in markets where they compete against DSL and a share advantage in markets where they compete against FTTN. For the purposes of this analysis, we assume terminal Cable broadband share of 75% in DSL markets, 65% in FTTN markets and 50% in FTTP markets (we assume total home broadband penetration of 85% across all markets). When applied to our pro forma overlap estimates (see Slide 8), we see penetration rising 1200bps on average to ~55%.

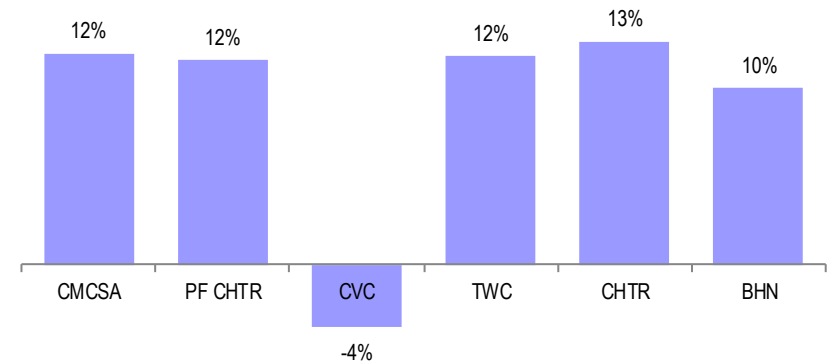
Terminal Broadband Penetration

% of homes passed



Upside To Current Broadband Penetration

% of homes passed



Source: Company data, New Street Research estimates

Fiber Overlap Should Double; Cable Still Advantaged In 70% Of Country

We assume FTTTP coverage almost doubles to 28% of the country as AT&T meets its 12.5MM home buildout obligation¹ and other carriers gradually expand fiber. CVC will still face the most fiber overlap at 54%, followed by Comcast at 31% and PF CHTR at 26%.

Competitive Overlap Today

% of footprint

	CMCSA	PF CHTR	CVC	TWC	CHTR	BHN	Industry Aggregate
FTTP	17%	14%	50%	17%	4%	25%	16%
FTTN	40%	32%	8%	30%	38%	34%	32%
DSL	44%	53%	42%	53%	57%	41%	53%
Total	100%	100%	100%	100%	100%	100%	100%

Future Competitive Overlap

% of footprint

	CMCSA	PF CHTR	CVC	TWC	CHTR	BHN	Industry Aggregate
FTTP	31%	26%	54%	29%	17%	37%	28%
FTTN	34%	28%	7%	27%	32%	26%	29%
DSL	34%	46%	39%	44%	52%	37%	43%
Total	100%	100%	100%	100%	100%	100%	100%

Assume fiber overlap almost doubles

¹ Upon closing the DTV transaction, AT&T committed to building FTTP to an additional 12.5MM customer locations by 2019 (only 2.9MM of which can be upgrades from existing locations where customers already receive speeds above 45Mbps). AT&T also committed to serving 25.7MM customer locations with speeds above 45Mbps by 2019.

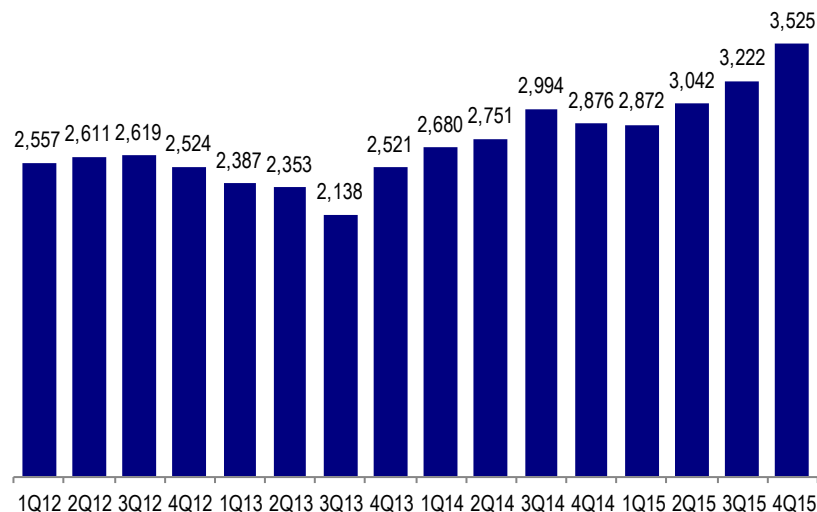
Source: Company data, New Street Research estimates

Cable Broadband Subscribers Are Accelerating

Cable subscriber growth has accelerated steadily over the last eight quarters, reaching 6.8% in 4Q15. Growth for the group was 25bps ahead of consensus for the quarter. More impressively, growth is accelerating on a large base. We expect this trend to continue as rising broadband utility and a need for higher speeds at households increasingly consuming over-the-top services plays to the Cable network advantage.

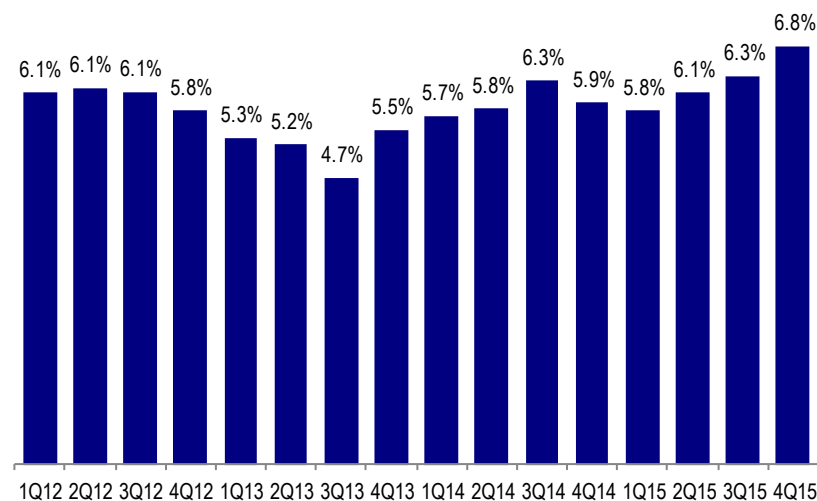
Cable Broadband Net Adds (TTM)

In thousands



Cable Broadband Subscriber Growth

Growth Y/Y



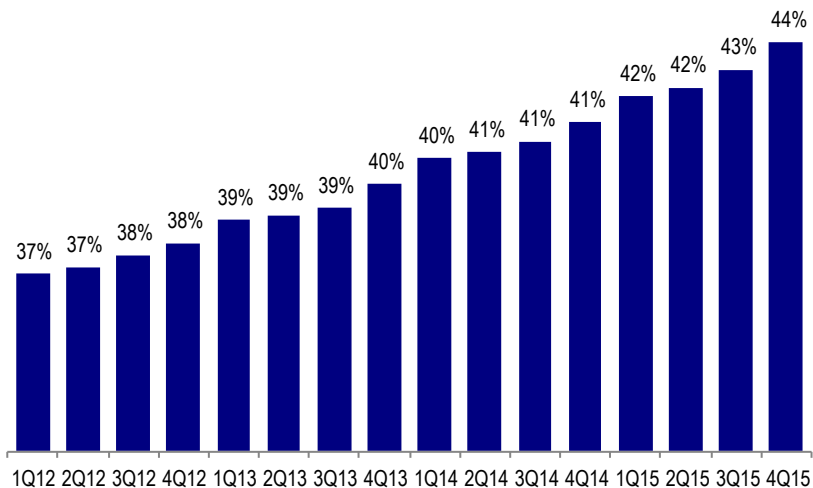
Source: Company data, New Street Research estimates

Broadband Penetration Is Accelerating

Broadband penetration increased 2.3% Y/Y to 44%, the largest penetration gain in recent years. Penetration still falls well short of the 55% terminal penetration rate we forecast. We think investors are overlooking this trend of accelerating gains.

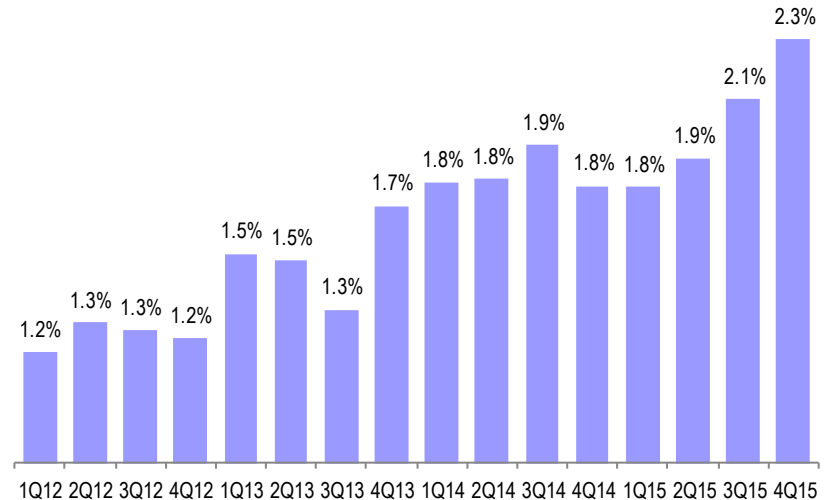
Cable HSD Penetration

% of passings



Change In Penetration (Y/Y)

% of passings

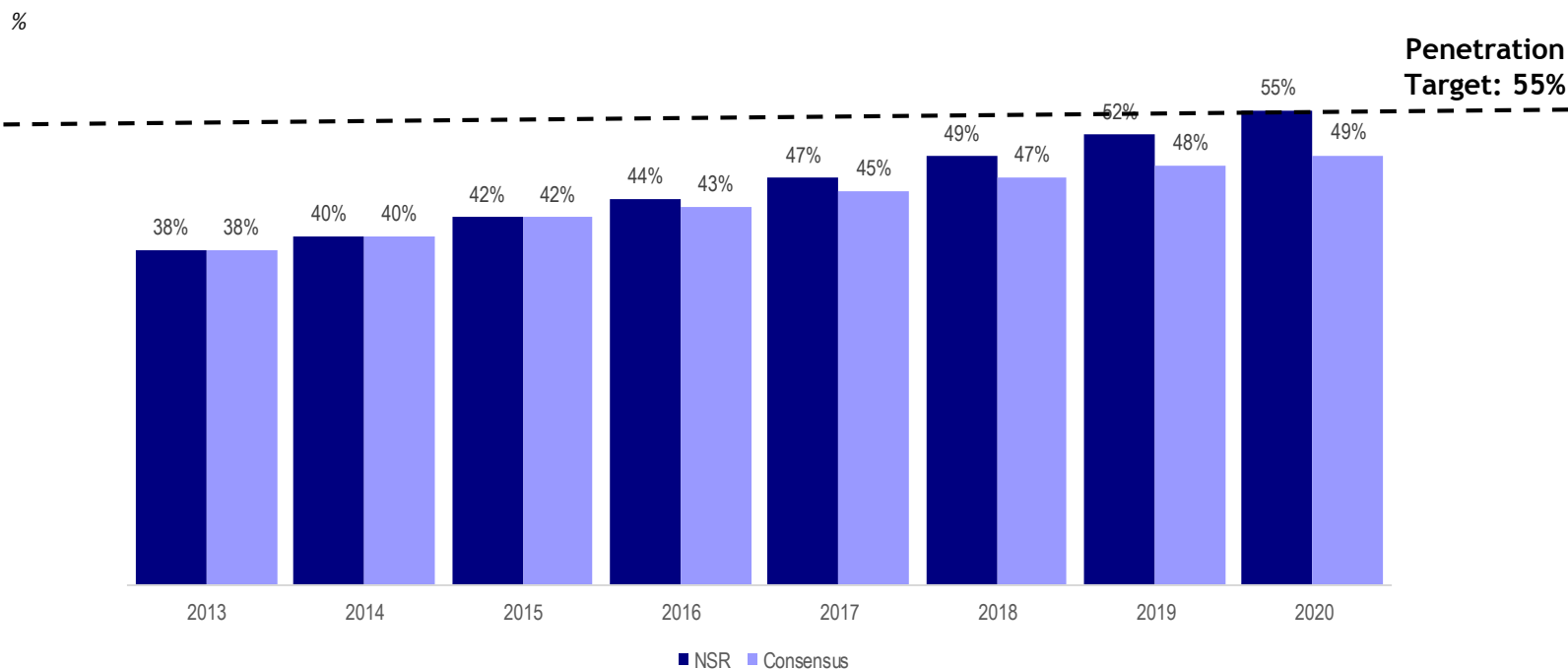


Source: Company data, New Street Research estimates

Long-Term Broadband Penetration Estimates Are Too Low

Consensus expectations reflect flat growth in 2016 and slowing growth thereafter, with broadband penetration tapping out at just 49% in 2020, 600bps below our target. This difference in expectations is significant, given high incremental margins in broadband. We estimate an incremental 600bps of broadband penetration would boost Cable EBITDA estimates by ~10% and margins by ~200bps.

Broadband Penetration - NSR vs. Consensus



Source: Company data, New Street Research estimates

Section 2: Broadband ARPU Poised To Rise

The second leg of our Cable thesis rests on the view that the industry has under-monetized broadband over the course of the last decade - while broadband utility has exploded, ARPU has barely risen and the price paid per GB consumed has collapsed. We expect ARPU to rise at a much faster rate over the next several years as Cable companies move to usage based pricing and capture more of annual price increases in broadband rather than video.

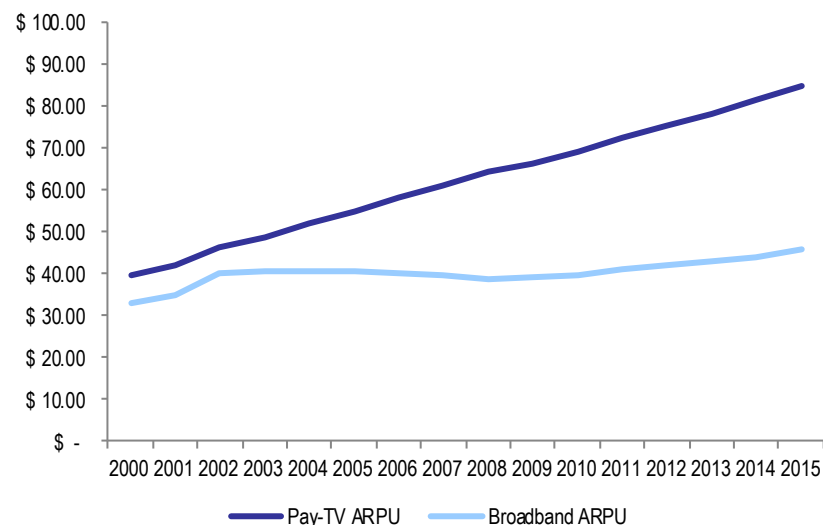
The single biggest push-back we hear on our cable thesis surrounds pricing - investors are skeptical that regulators will allow prices to rise. As such, Comcast's roll-out of usage-based pricing is an important test. If they are successful and ARPU growth accelerates as we expect, Cable multiples should start to rise towards other infrastructure comps in the US and Europe.

Broadband And Video Are Mispriced

Over the last decade, pay-tv ARPU has increased by over 50% whereas broadband ARPU has increased just over 10%. This trend in ARPU is starkly different from the trend in the utility of each service to the household - hours and GB of broadband consumed have risen exponentially while hours of video consumed have fallen. In the chart on the right, we adjust pay-tv ARPU for underlying utility and back into implied broadband ARPU. The analysis suggests the “true” value of broadband may be closer to \$90 rather than the ~\$45 the industry reports today.

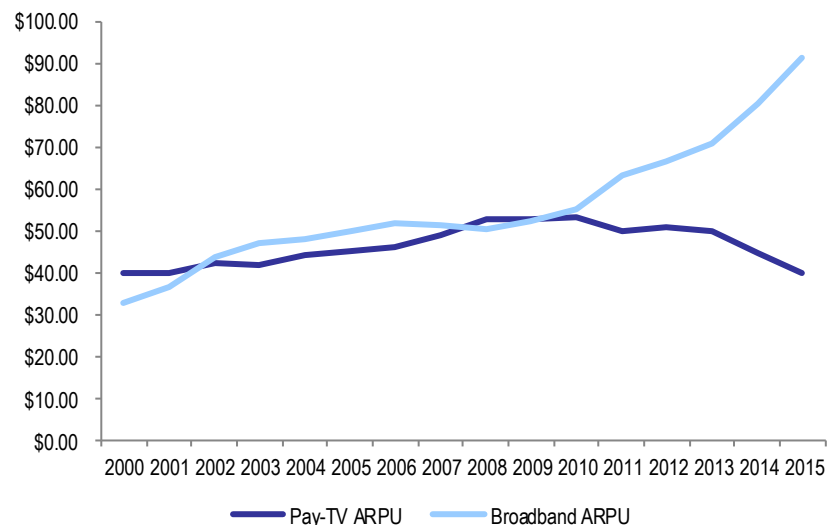
Reported Video & Broadband ARPU

USD per sub, monthly



Utility Adjusted ARPU

USD per sub, monthly



Source: Company data, New Street Research estimates

Comcast Expands Usage-Based Footprint

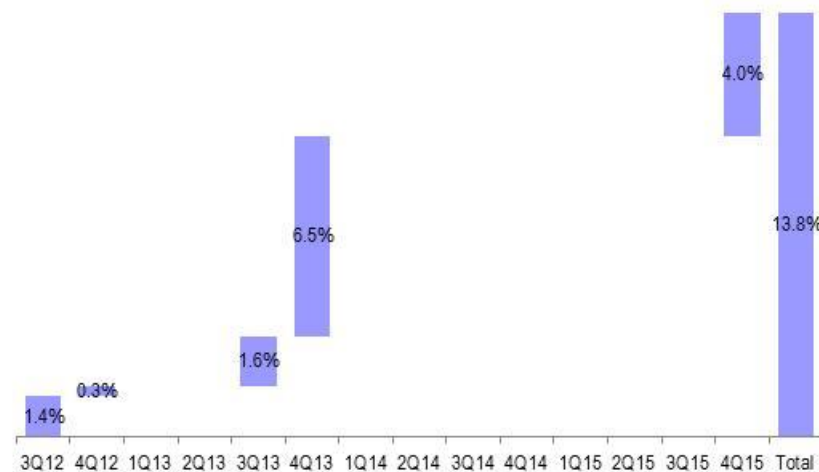
Comcast started rolling out usage-based pricing trials in 2012, with new markets launched periodically through 2013. The company paused during the Comcast / TWC merger review process, but started again with five new markets launched in November and December of 2015. About 14% of Comcast's footprint is now under usage-based pricing, and we expect this to continue expanding steadily over coming quarters. We don't expect regulators to move to stop this - based on our discussions with the FCC, usage-based pricing doesn't conflict with net neutrality principles or with Title II regulation.

Comcast Trial Cities

City	Introduced	HSD Subs
1. Nashville, TN	Aug. 2012	313,600
2. Tucson, AZ	Oct. 2012	70,933
3. Fresno, CA	Aug. 2013	143,769
4. Central KY	Sept. 2013	27,869
5. Jackson, MS	Sept. 2013	78,938
6. Savannah, GA	Sept. 2013	114,038
7. Knoxville, TN	Oct. 2013	146,120
8. Mobile, AL	Oct. 2013	56,382
9. Augusta, GA	Nov. 2013	87,821
10. Charleston, SC	Nov. 2013	99,871
11. Huntsville, AL	Nov. 2013	57,658
12. Memphis, TN	Nov. 2013	184,454
13. Atlanta, GA	Dec. 2013	826,342
14. Maine	Dec. 2013	31,974
15. Miami-Ft. Lauderdale-Keys, FL	Oct. 2015	628,437
16. Little Rock, AK	Dec. 2015	55,589
17. Houma-LaPlace-Shreveport, LA	Dec. 2015	48,302
18. Chattanooga-Greenville-Johnson City, T	Dec. 2015	94,051
19. Galax, VA	Dec. 2015	85,034
Total		3,151,182

Share Of Total CMCSA HH With Usage-Based Billing

% of footprint



Source: Company data, New Street Research estimates

Broadband Prices Are Set To Rise From Usage-based Plans

Comcast is testing two data-cap plans, one usage-based plan, and one unlimited plan in various markets. The data-caps are broadly 300GB, with additional 50GB buckets costing \$10. The Flexible-Data (usage-based) option is only available for the Economy Plus tier, which offers speeds of 3Mbps. The plan includes 5GB of data per month, with each additional GB used costing \$1 per month. Lastly, the customers can purchase an unlimited plan for an additional \$30-35 per month.

Comcast's Trial Cities

Number of HSD subs

City	Introduced	HSD Subs	Data-Cap	Flexible	Unlimited
Nashville, TN	Aug. 2012	313,600	✓	✓	✓
Tucson, AZ	Oct. 2012	70,933	✓		
Fresno, CA	Aug. 2013	143,769		✓	
Central KY	Sept. 2013	27,869	✓	✓	
Jackson, MS	Sept. 2013	78,938	✓	✓	✓
Savannah, GA	Sept. 2013	114,038	✓	✓	✓
Knoxville, TN	Oct. 2013	146,120	✓	✓	✓
Mobile, AL	Oct. 2013	56,382	✓	✓	✓
Augusta, GA	Nov. 2013	87,821	✓	✓	✓
Charleston, SC	Nov. 2013	99,871	✓	✓	✓
Huntsville, AL	Nov. 2013	57,658	✓	✓	✓
Memphis, TN	Nov. 2013	184,454	✓	✓	✓
Atlanta, GA	Dec. 2013	826,342	✓	✓	✓
Maine	Dec. 2013	31,974	✓	✓	
Miami-Ft. Lauderdale-Keys, FL	Oct. 2015	628,437	✓	✓	✓
Little Rock, AK	Dec. 2015	55,589	✓	✓	✓
Houma-LaPlace-Shreveport, LA	Dec. 2015	48,302	✓	✓	✓
Chattanooga-Greenville-Johnson City, TN	Dec. 2015	94,051	✓	✓	✓
Galax, VA	Dec. 2015	85,034	✓	✓	✓

Trial Plan Options: Data-Cap vs. Flexible-Data

GB per month

Data-Cap Option	Trial Markets (ex-Tucson)	Tucson, AZ
Economy Plus	300 GB	300 GB
Performance Starter	300 GB	300 GB
Performance	300 GB	300 GB
Performance Pro	300 GB	300 GB
Blast	300 GB	350 GB
Extreme 505	300 GB	600 GB
<i>memo: Price for addl 50GB</i>	<i>\$10.00</i>	<i>\$10.00</i>
Flexible-Data Option	Trial Markets	
Internet Tier Applicable	Economy Plus	
Speed	3Mbps	
Included Data	5 GB	
Overage Charge Per GB	\$1	
Unlimited-Data Option	Trial Markets	
Internet Tier Applicable	All <505Mbps	
Speed	<505Mbps	
Included Data	Unlimited	
Additional Charge	\$30 - \$35	

Source: SNL Kagan, Company data, New Street Research estimates

Mid-Tier MSOs Have Already Implemented Usage-Based Pricing

Data-caps and usage-based billing are nothing new for the mid-tier Cable companies. For instance, GNCMA moved to usage-based billing over ten years ago, while CABO began five years ago. The majority of companies charge \$10 per 50GB over the allotment (similar to Comcast).

Mid-Tier Cable Data Cap Plans

GB per month

CABO

Speed Tier	Speed	Data Cap
Streaming	100 Mbps	300 GB
Premier	150 Mbps	400 GB
Ultra	200 Mbps	500 GB

memo: If sub exceeds the data cap 3x in 12mo, they are upgraded to the next tier

General Communication

Speed Tier	Data Cap	Addl \$10 of Data
10 Mbps	40 Mbps	5 GB
50 Mbps	150 Mbps	10 GB
100 Mbps	300 Mbps	20 GB
Red - 1 Gig	750 Mbps	30 GB

memo: Some GCI Internet plans have a maximum usage overage charge of \$200 per month. Customers who breach \$200 in overage in a month will not be billed extra, but will be reduced to a Basic Level of Service for the remainder of the billing cycle.

Mediacom

Speed Tier	Speed	Data Cap
Launch	3 Mbps	150 GB
Prime	15 Mbps	250 GB
Prime Plus	50 Mbps	350 GB
Ultra	100 Mbps	999 GB
Ultra Plus	150 Mbps	2000 GB
Ultra Plus 3T	150 Mbps	3000 GB

memo: \$10 per additional 50GB

Cox

Speed Tier	Speed	Data Cap
Starter	5 Mbps	150 GB
Essential	15 Mbps	250 GB
Preferred	50 Mbps	350 GB
Premier	100 Mbps	700 GB
Ultimate	150 Mbps	2000 GB
Gigablast	1 Gbps	2000 GB

memo: Information applicable for Orange County, CA.

Data caps may differ by location.

Testing in Cleveland only: \$10 per additional 50GB

Suddenlink

Speed Tier	Speed	Data Cap
Internet 50	50 Mbps	250 GB
Internet 100	75 Mbps	350 GB
Internet 200	100 Mbps	450 GB
Internet 1 GB	1 Gbps	550 GB

memo: Overages are not charged the first two times.

Upon the third instance, Suddenlink will charge \$10 per each 50 GB installment.

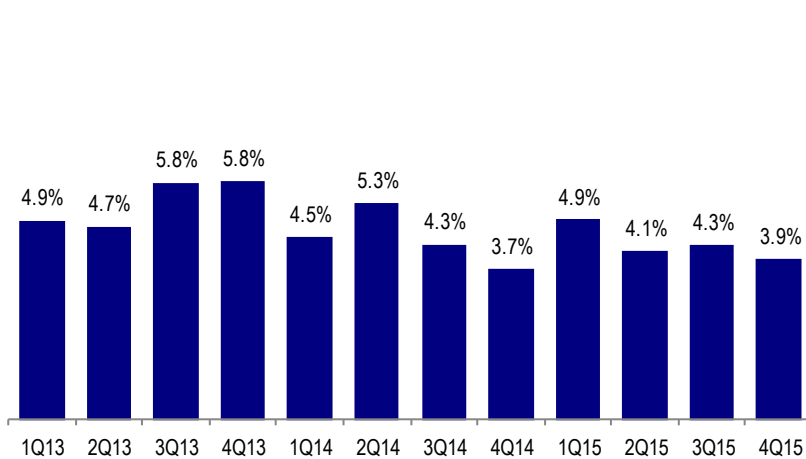
Source: Company data, New Street Research estimates

Usage-Based Pricing Drives ARPU Growth

GNCMA was the first to launch usage-based pricing and they have seen double-digit ARPU growth for much of the last few years. Cable One implemented usage based pricing more recently, and has seen ARPU growth accelerate to a similar range over the last couple of quarters. Cable One will follow this up with a \$5 increase on all plans on top of usage-based growth. Both companies have said that it took a couple of years after the implementation of usage based pricing for ARPU to benefit in a major way. We would expect the larger MSOs to benefit in a similar fashion as they roll out these plans.

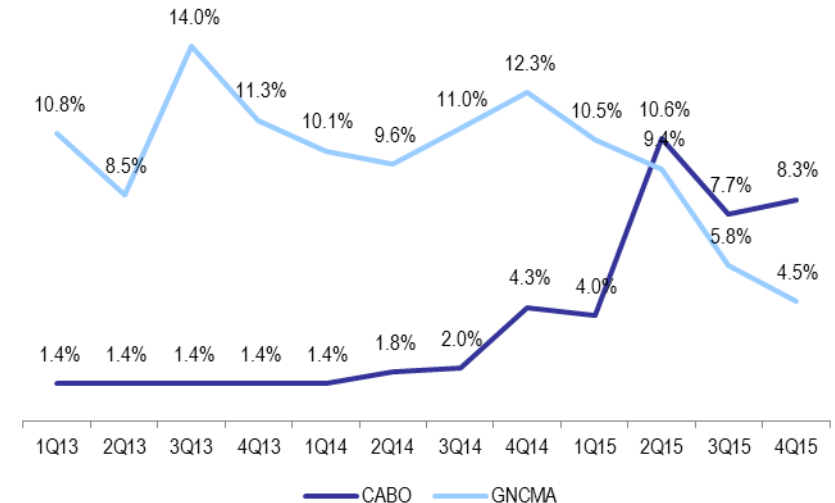
Broadband ARPU Growth: Large MSOs

Growth y/y



Broadband ARPU Growth: Small MSOs

Growth y/y



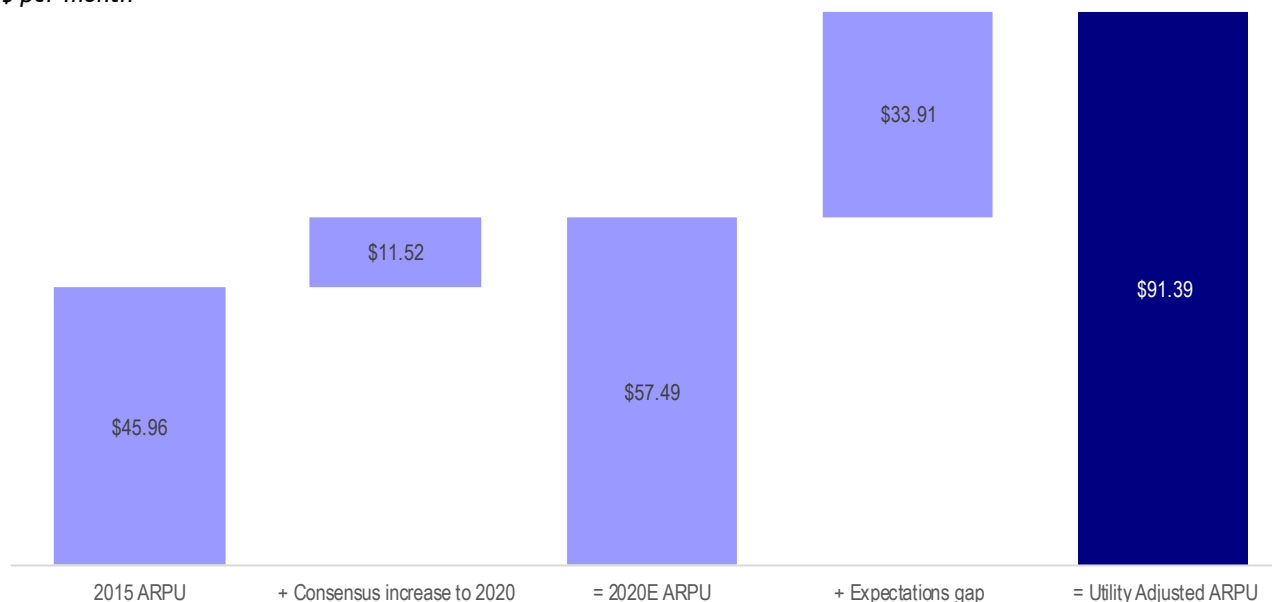
Source: Company data, New Street Research estimates

Long-Term ARPU Estimates Are Too Low

We think long-term broadband ARPU estimates could be as much as \$34 too low (ours are too low also). Adjusting for the rising utility of broadband, our estimate of “true” value suggests that broadband service could generate ARPU of ~\$90 today, and this should continue to grow. This is miles above current ARPU of \$46 and even consensus estimates of \$57 in 2020. Even if there is no increase in utility from here, 2020 estimates could be \$34 too low. Every \$10 of broadband ARPU would boost EBITDA by 15% and margins by 340bps.

Broadband ARPU

\$ per month



Source: Company data, New Street Research estimates

Section 3: OTT Pressures Continue; Cable Takes Share

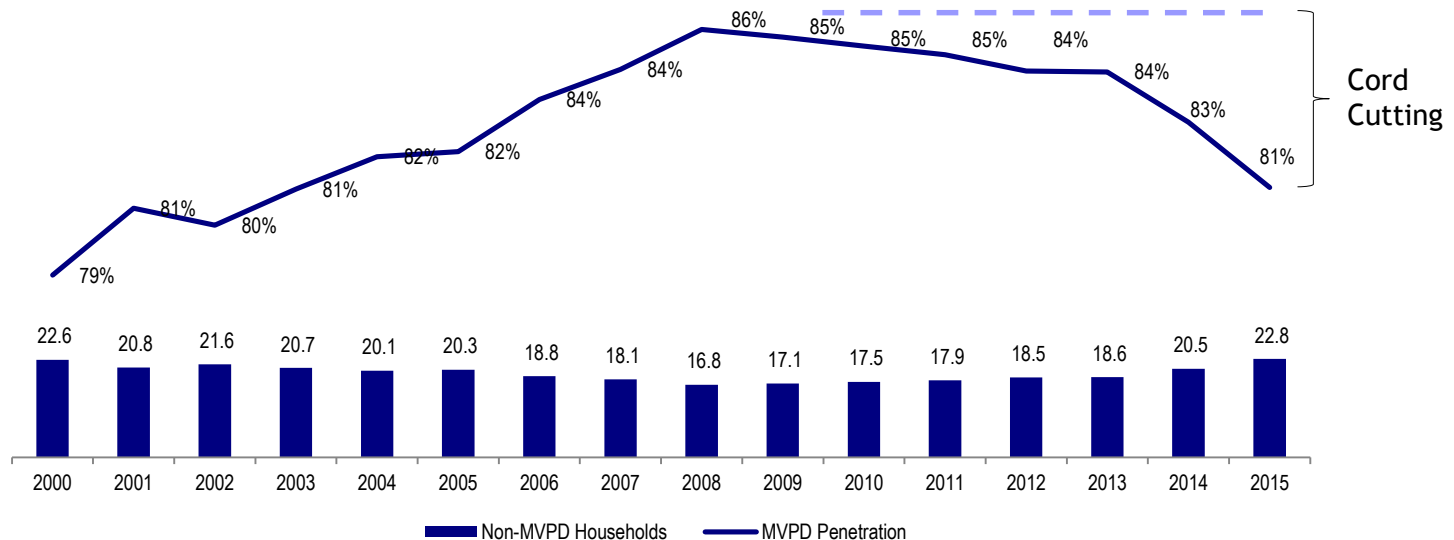
The traditional pay-tv market continued to shrink, with penetration falling to 81%. We have argued that investors needn't worry about this trend for two reasons: first, Cable companies will take share in a declining market driven by broadband penetration gains; second, most Cable companies don't make much money from pay-tv. The cash flow that is lost when a subscriber drops pay-tv service is more than offset by the increase in broadband ARPU from the loss of the bundled discount.

Households Are Dropping Traditional Pay-TV Subscriptions

MVPD penetration of households peaked at 86% in 2008, the year after Netflix began its streaming service. Since then, households without pay-tv have increased by 6MM. This includes cord-cutters and new households that have never signed up for a traditional pay-tv subscription. 6MM over 7 years doesn't seem like a big deal; however, the trend is accelerating.

Non-MVPD Households vs. MVPD Penetration

HH in millions; %



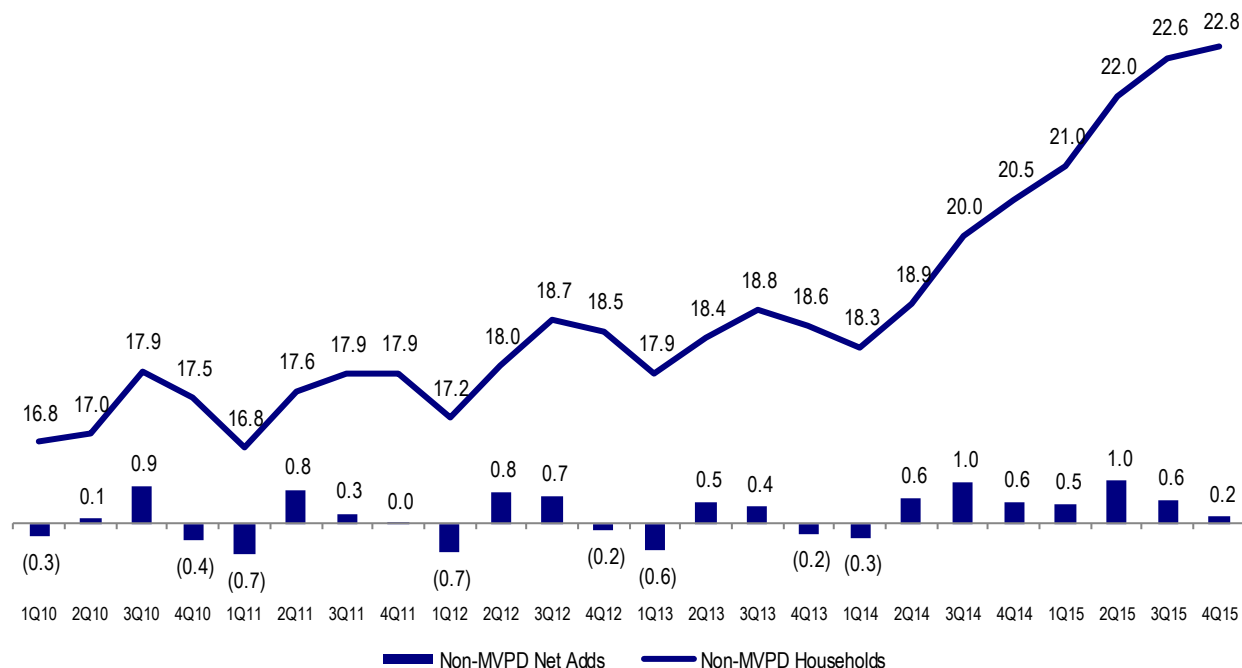
Source: SNL Kagan, Company data, New Street Research estimates

Cord Cutting Moderated This Quarter

We estimate that households without a traditional pay-tv subscription increased by 0.2MM this quarter, compared to 0.6MM last quarter and 1.0MM the quarter before. Non-pay-tv households increased by 2.3MM for the year, vs. 1.9MM in 2014 and 0.1M in 2013. We expect this trend to accelerate further as over-the-top offerings proliferate and improve and as household content consumption habits continue to evolve.

Non-MVPD Net Adds vs. Non-MVPD HH

Households in millions



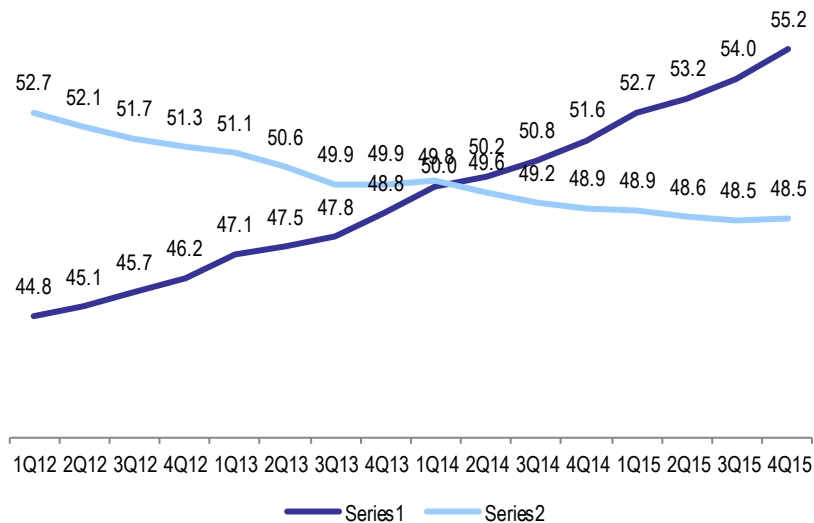
Source: SNL Kagan, New Street Research estimates

Cable Broadband Subs Have Eclipsed Video Subs

Broadband subscribers exceeded video subscribers for the first time in 1Q14. As Cable companies continue to take share in broadband, the households that continue to take a traditional pay-tv product will likely take it from their broadband provider. As such, Cable companies should take share in pay-tv as they take share in broadband. We estimate that 60-80% of Cable broadband subs take pay-tv from the Cable company; this take rate will likely decline over time; however, there should be a pull-through impact for pay-tv from growth in broadband.

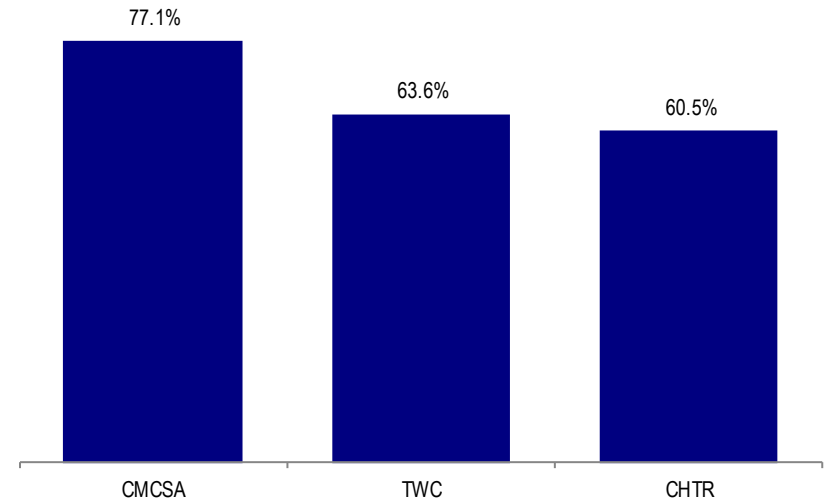
Cable HSD and Pay-TV Subscriptions

In millions



Pay-TV Penetration of Cable HSD Subs

%



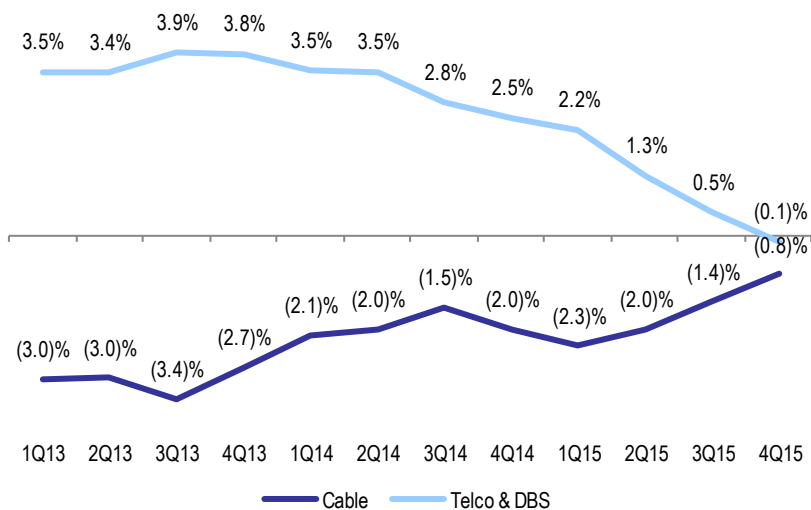
Source: Company data, New Street Research estimates

Cable Video Share Is Stabilizing

The four large Cable companies gained 170k subs in 4Q15, making this one of the best 4Q video sub result in the last 10-15 years. We think this is driven in large part by the trend described on the prior slide further, helped by improvements in the Cable pay-tv product. Cable market share has stabilized at a little above 50% for the last four quarters; we would expect Cable to start gaining share in a declining market.

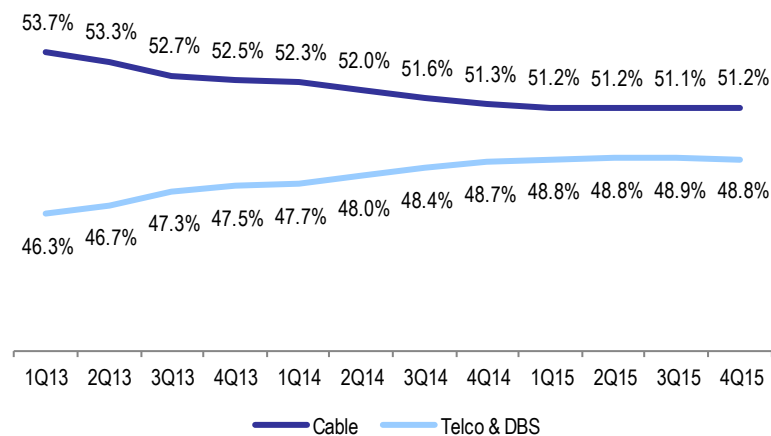
Video Subs Growth Y/Y

%



Video Market Share

%



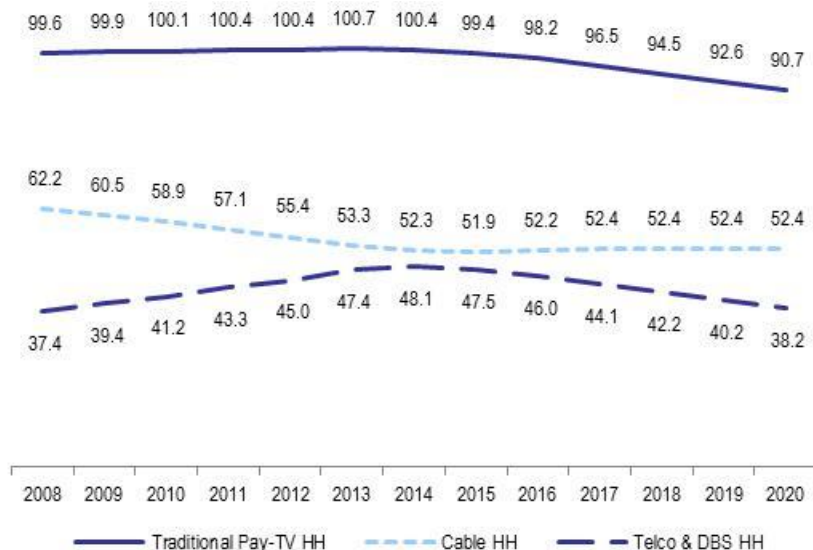
Source: Company data, New Street Research estimates

Cable Poised To Take Share

Our preliminary pay-tv industry model forecasts traditional pay-tv subscriptions declining by about 9MM over the next five years (we would regard this as generous). We would expect Cable companies to increase their share, resulting in relatively stable pay-tv subscribers over this time frame. We would expect DBS companies to bear the brunt of the pressure, potentially losing 10MM subscribers over this time frame. Importantly, this trend is more important for DBS than it is for Cable as we don't think most Cable companies make much money in pay-tv.

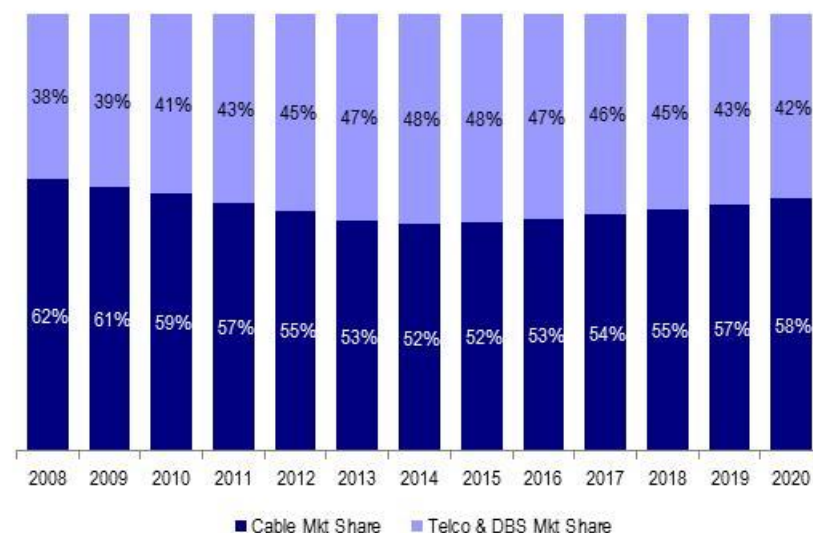
Traditional Pay-TV Households

In millions



Traditional Pay-TV Market Share

% of MVPD households



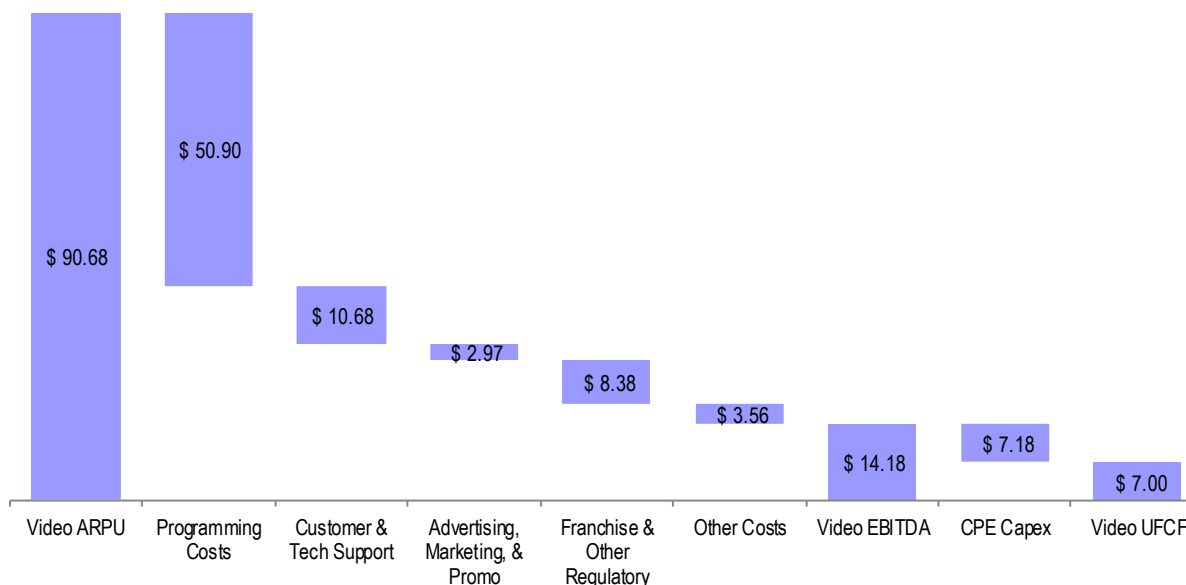
Source: Company data, New Street Research estimates

Cable Companies Don't Make Money In Pay-TV

In our Cable cost model we estimate costs that are truly variable with the pay-tv business; we don't allocate fixed infrastructure costs to the product; we are trying to isolate just the costs that would be eliminated if a pay-tv subscriber disconnects service. Using Charter as an example, our model suggests that of \$91 in ARPU, just \$7 flows through to FCF. When a subscriber drops pay-tv and keeps broadband their broadband bill generally increases by at least \$10, resulting in little if any loss in economic value. We would expect the premium for standalone broadband to increase over time such that Cable companies will see FCF improve as they lose pay-tv subs (particularly if content cost continue to grow at a high-single-digit pace).

Drivers Of Video Profitability

Charter (4Q15); \$ per month per video subscriber



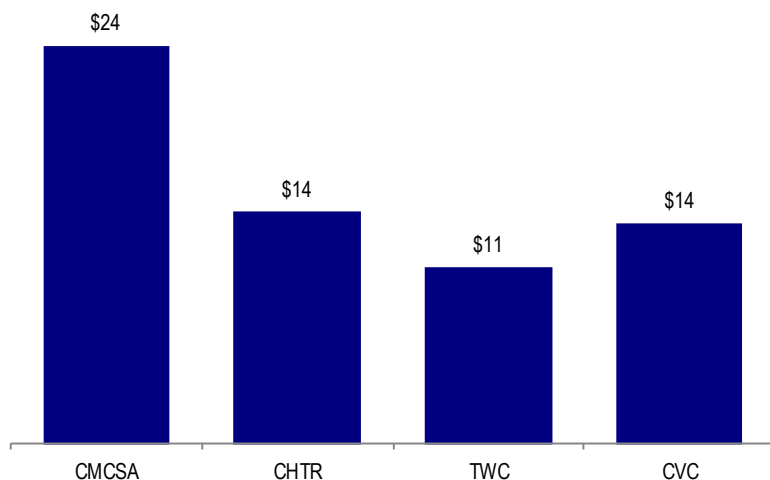
Source: SNL Kagan, Company data, New Street Research estimates

Higher Broadband ARPU Should Offset Pay-tv Sub Losses

Content costs scale with subscribers such that larger Cable companies generate higher margins on the pay-tv product than smaller ones (TWC is an anomaly; they have higher non-content costs than peers). As such, Comcast has more at stake in the pay-tv business than the other three companies, which would explain their greater willingness to invest in the product. Comcast should fare better with pay-tv sub trends because of these investments; however, even if we are wrong, it doesn't matter nearly as much as investors believe. The \$18 will likely be eroded over time as content costs rise and Comcast could charge a \$20 premium for standalone broadband.

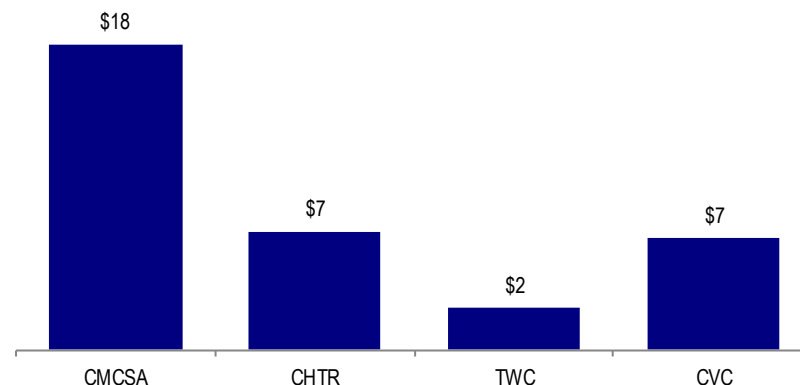
4Q15 Video EBITDA Per Sub

\$ per month



4Q15 Video UFCF Per Sub (EBITDA - CPE Capex)

\$ per month



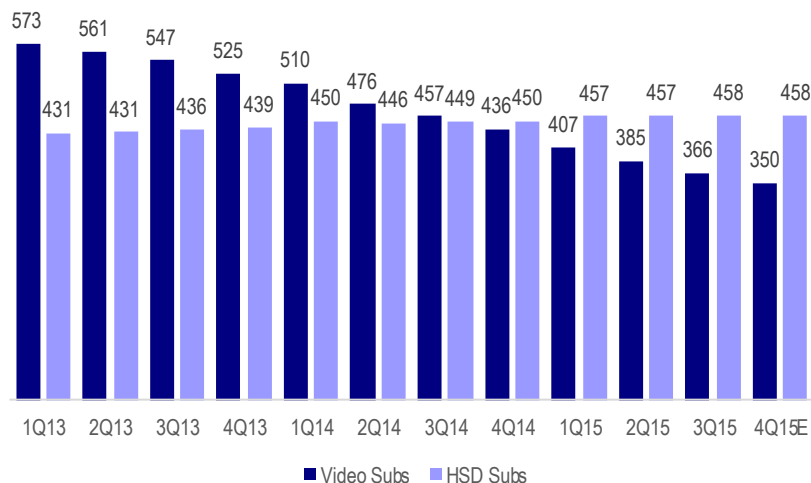
Source: Company data, New Street Research estimates

Test Case: CABO Grows EBITDA While Losing 33% Of Pay-tv Subs

Cable One (CABO) has lost 33% of their pay-tv subs over the last two years and they have grown EBITDA by 5% over the same time frame. This seems to support our view that there are a significant component of costs that are variable with pay-tv subscribers over and above content costs. Cable One had a stronger incentive to manage down their pay-tv subscriber base than the larger companies do because their content costs are higher and so pay-tv product is even less profitable.

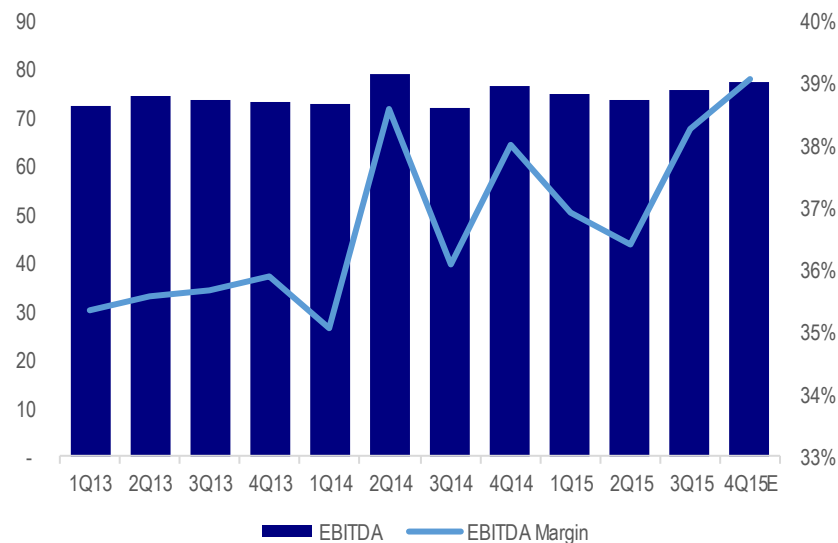
Cable One Broadband And Pay-TV Subscribers

Subs in thousands



Cable One EBITDA And EBITDA Margin

\$ in MM; %



Source: Company data, New Street Research estimates

Section 4: Cable Moves Closer To Wireless

We expect Comcast to at least trial a WiFi-first mobile offering in the next 3-6 months, with a broader roll-out late this year along with the release of the next generation of Apple and Samsung devices. We estimate that Comcast will make solid margins on an attractively priced product even under current MVNO terms. The Verizon MVNO may work as a market entry strategy but may not be an ideal long-term solution; we would expect Comcast to secure a “deep” MVNO, network share, or acquire a wireless carrier in time. Purchasing spectrum will be valuable whichever path they follow, if the business proves successful.

Cable Wireless Entry Controversies

1. **MVNO Pricing Outdated:** Verizon has claimed that the MVNO agreement was signed 4 years ago and the wholesale rates are now out of date. The implication is that it would be uneconomic for Comcast to enter the market using these rates. We disagree; based on our analysis we estimate Cable companies will make an attractive margin, even with above market wholesale rates, because so much of the traffic will be offloaded. In addition, they should be able to negotiate better rates from Sprint and TMUS which would leave Verizon to chose between cutting wholesale rates or losing high-margin wholesale revenues.
2. **MNVO Not “Future-proof”:** According to Verizon mgmt. Cable companies would need to negotiate new terms for 5G wholesale. This may be true, but when the industry is ready to move to 5G sometime around 2020 the Cable companies could have 30-40MM wireless subs; if there are four carriers we would assume at least one would be willing to offer attractive wholesale terms; if there has been consolidation we would assume that offering attractive wholesale terms for an indefinite period would be a necessary merger condition.
3. **600MHz Spectrum Improves Strategic Optionality:** We believe the existing MVNO agreements allow Cable an attractive way to enter the wireless market with little upfront cost; however, if the strategy proves successful we expect Cable to want to have more control over their network and customers than the current MVNO agreements allow. We see Cable’s wireless strategy ending in three potential outcomes: 1) a network sharing deal; 2) a “Deep” MVNO which gives Cable more control over products and services; and 3) a carrier acquisition (most likely TMUS). Owning spectrum is important for all three long-term strategies. As such, we expect Cable to participate meaningfully in the upcoming auction. Our base case assumes Comcast comes away with a nationwide 10MHz block of spectrum for a net outlay of \$3-5BN.
4. **Wholesale vs retail:** Launching a retail wireless product would be attractive; however, the Cable industry could also create a lot of value by becoming infrastructure providers to the carriers rather than competitors. Importantly, we don’t believe these strategies are mutually exclusive. All wireless carriers will increasingly need access to fixed infrastructure as they move to 5G (and we like infrastructure multiples).

Market Entry Strategies

1. **WiFi-Only:** A product that only works on WiFi is not a substitute for full mobile service. The addressable market for this kind of a product is small, as is evidenced by Republic Wireless signing an estimated 200k subs nationwide over six years. CVC's Freewheel service falls into this category; we don't expect it to be successful.
2. **WiFi + MVNO:** We believe a cable offering that leverages their fixed WiFi infrastructure in conjunction with an MVNO can be a truly disruptive offering. We estimate that cable companies could have a lower cost structure than wireless incumbents, if they can offload enough data and voice traffic to WiFi and VoIP. We believe this is a great market entry strategy but it will prove challenging over the long run because the MVNO relationship would limit the control Cable would have over their products and customers.
3. **Network Sharing:** In a typical network sharing deal, Cable would bring their own spectrum to a carrier who would host it on their passive infrastructure. This could be an attractive way for cable to have their own network longer-term. The issue is securing enough spectrum to support a nationwide network; we estimate Cable would need to acquire at least 50MHz of spectrum to support 15% market share.
4. **Hybrid Model:** Cable could provide some spectrum as well as access to their broadband infrastructure and real estate for small cell deployments, and their WiFi network in exchange for much better economics from a carrier and more effective control over the product and customers. This would be similar to the deep MVNOs that have been struck in some European markets.
5. **New Network Build:** We don't believe a new network build from scratch is an attractive option because it would be more costly and riskier than network sharing. The wireless business would therefore take longer and require more subscribers to breakeven on cash flow; investors would be better off with the other approaches.
6. **Acquisition:** We think this is the most likely long-term strategy for Cable. Acquiring a carrier yields instant scale, positive EBITDA/FCF, and preserves a four player market with higher revenues and returns than there otherwise would be. The key risk to this strategy is getting it past regulators.

The WiFi-First Model Is Not A Traditional MVNO

Cable companies have a distinct advantage over traditional MVNOs, including: 1) voice and data traffic can be offloaded onto WiFi, resulting in lower usage costs; 2) the ability to leverage existing back office systems, resulting in lower G&A per sub; 3) the selling of an add-on product to existing subs, resulting in lower SAC costs. We estimate if a Cable operator can offload 75% of data and 50% of voice, this should generate a 25% EBITDA margin compared to negative margins for a traditional MVNO at the same ARPU. If operators can shift all of their voice and text traffic to VoIP, we think margins could expand to 40%.

Cable WCW Vs. Traditional MVNO Economics

\$/sub, monthly

	Traditional MVNO	WCW	WCW	WCW		WCW	WCW	WCW	WCW	WCW
Voice/Text offload to WiFi	0%	0%	50%	50%		50%	50%	50%	50%	50%
VoLTE	0%	0%	0%	50%		50%	50%	50%	50%	50%
Data offload to WiFi	63%	75%	75%	75%		55%	65%	75%	85%	95%
ARPU	\$35.00	\$35.00	\$35.00	\$35.00		\$35.00	\$35.00	\$35.00	\$35.00	\$35.00
- Voice costs / sub	\$7.75	\$7.75	\$3.88	\$0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
- Text cost / sub	\$3.05	\$3.05	\$1.53	\$0.00		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
- Data cost / sub	\$26.14	\$17.86	\$17.86	\$17.86		\$32.14	\$25.00	\$17.86	\$10.71	\$3.57
= Gross margin per sub	-\$1.95	\$6.34	\$11.74	\$17.14		\$2.86	\$10.00	\$17.14	\$24.29	\$31.43
memo: Gross margin	-5.6%	18.1%	33.5%	49.0%		8.2%	28.6%	49.0%	69.4%	89.8%
- SG&A / sub	\$6.68	\$3.00	\$3.00	\$3.00		\$3.00	\$3.00	\$3.00	\$3.00	\$3.00
- Fixed / other costs	\$0.13	\$0.13	\$0.13	\$0.13		\$0.13	\$0.13	\$0.13	\$0.13	\$0.13
= EBITDA / sub	-\$8.75	\$3.21	\$8.61	\$14.01		-\$0.27	\$6.87	\$14.01	\$21.16	\$28.30
memo: Margin	-25%	9%	25%	40%		-1%	20%	40%	60%	81%

**EBITDA Per Sub
Significantly Higher**

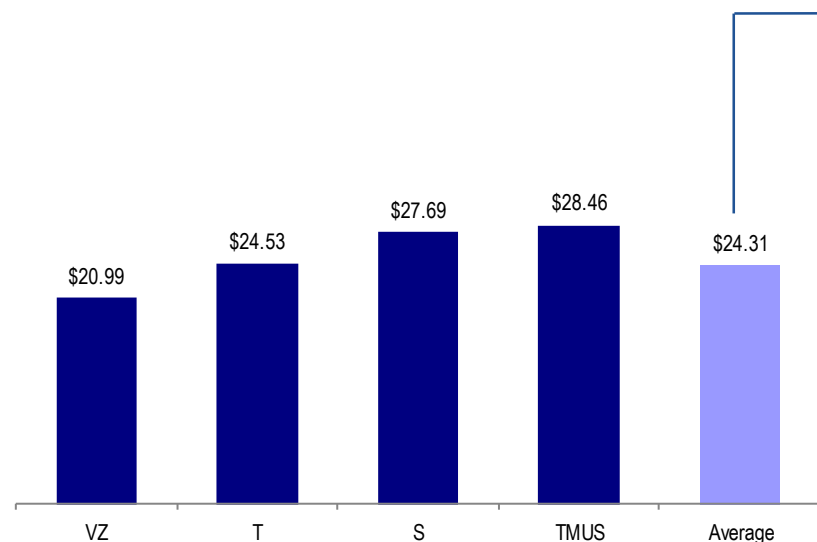
Source: Company data, New Street Research estimates

Cable Could Eventually Have A Lower Cost Structure Than Incumbents

If Cable companies offloaded 75% of data traffic and 50% of voice traffic to WiFi, we estimate that they would have a cost structure that is slightly higher than VZ and T but lower than S and TMUS. If Cable can shift 100% of voice traffic to VoIP, then we estimate Cable could have a cost structure that is 14% lower than the average carrier.

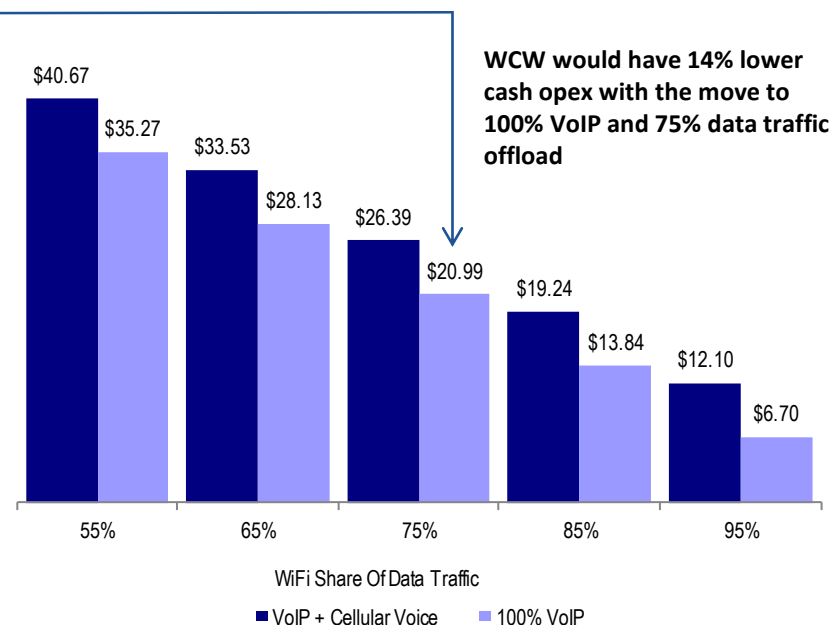
Cash Opex At Wireless Carriers ¹

\$ per sub, monthly, 2015



Cash Opex For WCWs ¹

\$ / sub, monthly; sensitized to WiFi share of data traffic



¹ We exclude subsidy costs to properly compare the cost structure of unsubsidized service plans

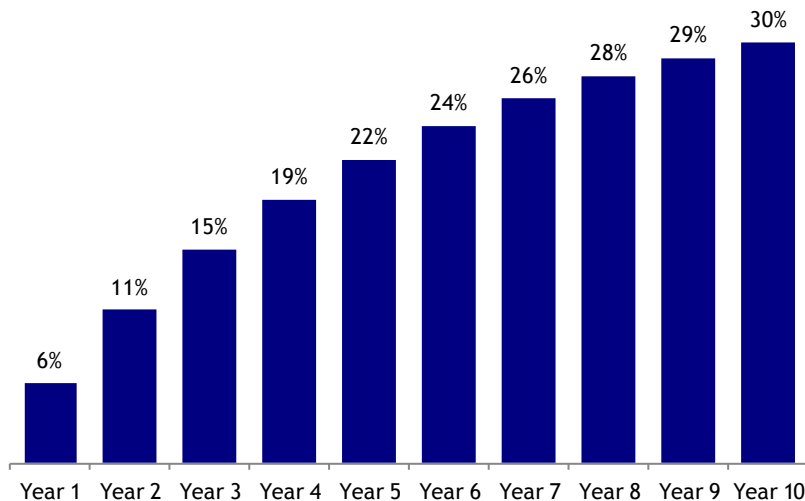
Source: Company data, New Street Research estimates

Cable Should Penetrate ~20% Of Their Customers Over Five Years

Our preliminary WiFi-first subscriber model assumes: the cable company selects a price point that allows for steady share gains but is not wildly disruptive; they target existing subscribers and sell to all eligible members of the household; a take rate of 16.5% and churn of 1.5%. This model is pretty conservative - Telenet was able to penetrate 20% of their base in Belgium with a WiFi first offering with most of those gains coming over the course of just two years. Based on our ARPU assumption of \$35, this would boost Cable revenues by ~10%.

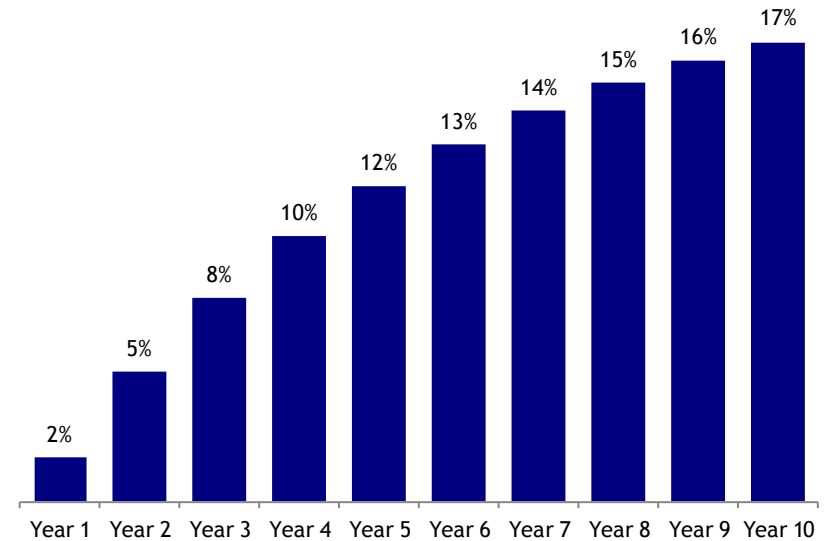
Penetration Of Customer Relationships

%



Wireless Share of Current Cable Revenue

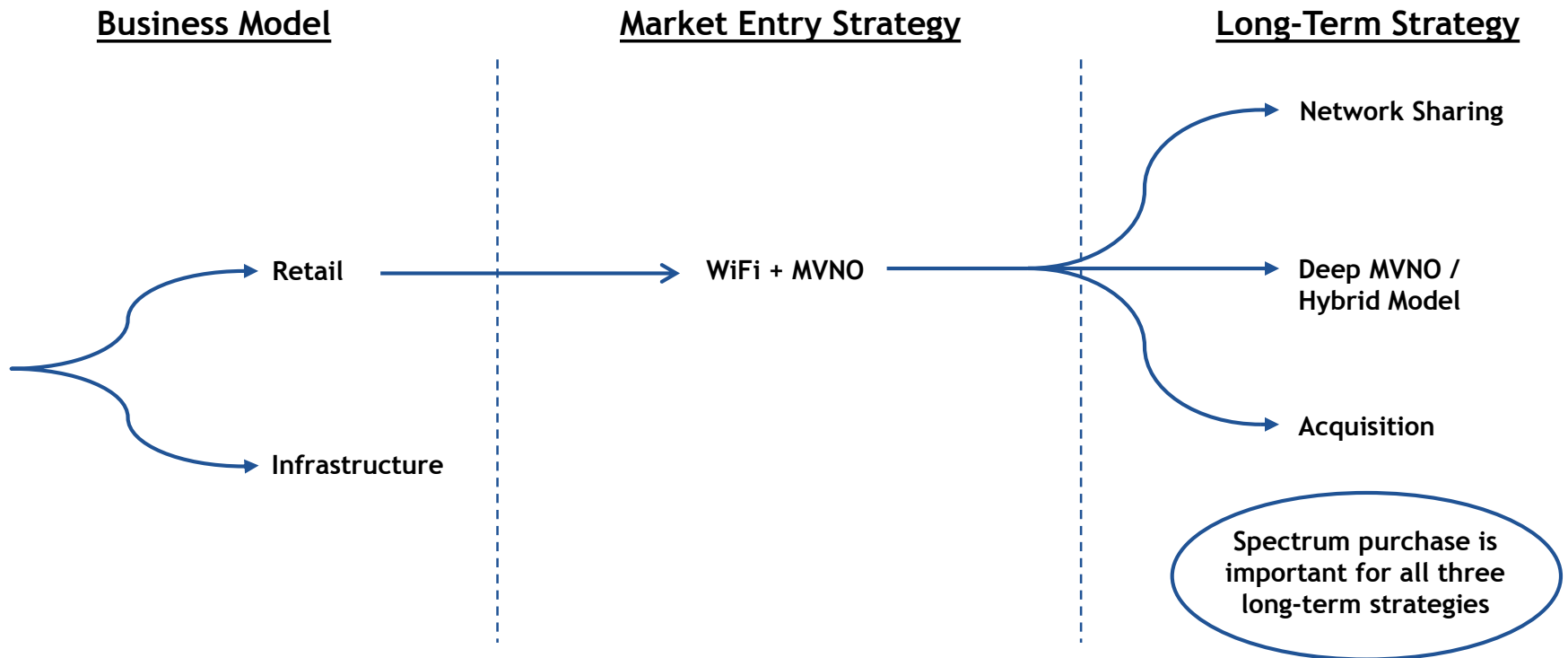
%



Source: Company data, New Street Research estimates

Cable's Evolving Wireless Strategy

Leveraging fixed infrastructure in conjunction with an MVNO is a great way for Cable to enter the wireless market because it requires little upfront capex. If the wireless entry proves successful, however, we believe the MVNO agreements will be too limiting on the types of products and services Cable would want to offer. This leaves Cable with three long-term options: 1) strike a network sharing deal with an operator; 2) secure a “Deep” MVNO with their current providers which gives them more control over the network and services; or 3) Acquire a carrier. Importantly, we believe acquiring spectrum is critical for all three of the long-term strategies.



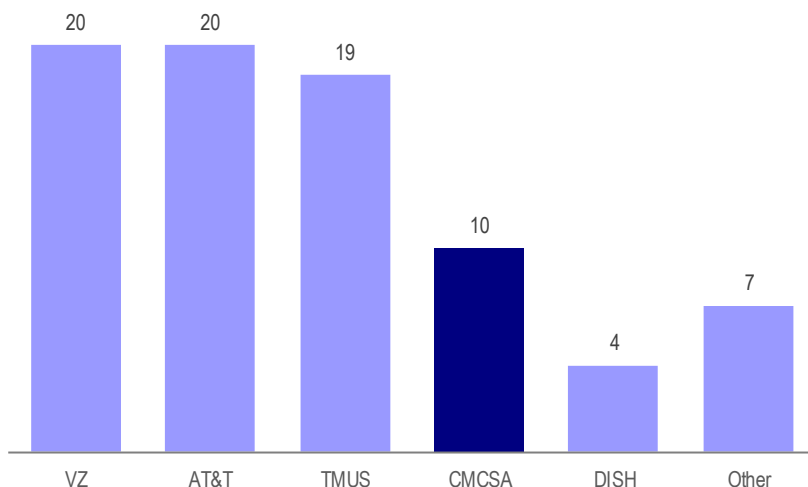
Source: Company data, New Street Research estimates

We Expect Comcast To Participate Meaningfully In The Auction

Our base case is for Comcast to acquire a 10MHz nationwide swath of spectrum in the upcoming auction. At our assumed price of \$1.50 / MHz-POP, this would amount to a capital outlay of \$4.6BN. This will likely be offset by proceeds from selling spectrum in the reverse auction, resulting in a net spend of somewhere between \$3-5BN. We don't think 10MHz of low-band spectrum will be enough for Comcast to launch their own wireless network; however, it will likely serve as a valuable strategic asset for whatever long-term solution Comcast pursues.

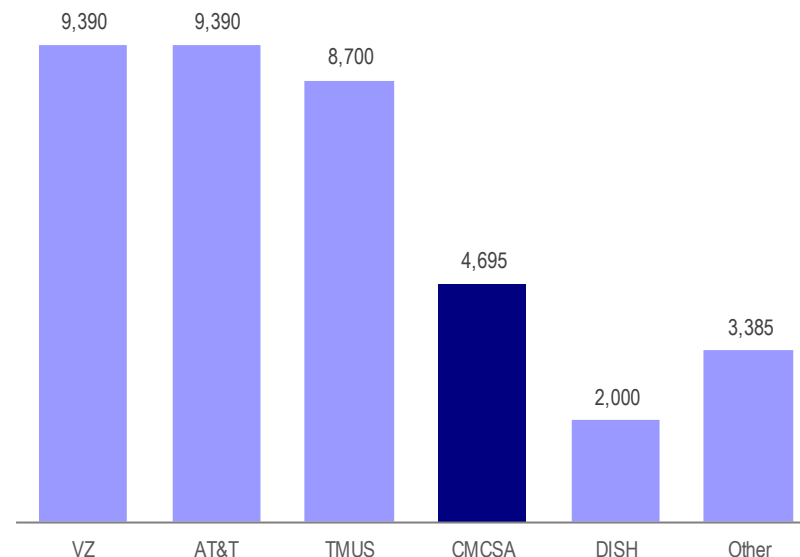
600MHz Auction Spectrum Acquisition Assumptions

MHz



600MHz Auction Capital Outlay Assumptions

USD



Source: Company data, New Street Research estimates

Section 5: Control Over The Set Top Box

With the FCC's recent NPRM aimed at making MVPD content accessible on third party set top boxes, investors are concerned that ~\$9BN in revenue may be at risk and that this may be high margin revenue. We aren't concerned for three reasons: 1) STB revenue is just video revenue in disguise and, if required, the industry would reclassify it as such, just as the wireless industry did during a similar transition; 2) Cable companies don't make much money on boxes; Cable margins would likely improve if households self-sourced boxes; 3) We doubt there will be much demand for a box that is not supported by the cable company; households have been able to buy their own boxes for the last ~10 years under the cable card regime and penetration remains low. This assumes cable companies deliver an adequate product. There is no reason why they shouldn't and if they do, they may have a great deal to gain by capturing viewership data across linear and OTT content.

.

A Brief Summary Of The Set Top Box NPRM

- **The Objective:** The objective of the NPRM is to give consumers more choice for the devices they utilize to access MVPD video services, and to promote innovation in the display, selection, and use of video programming content. The FCC claims that 99% of pay-tv subscribers use the boxes provided for them by their MVPD because they don't have options, and this has resulted in high STB fees for consumers.
- **The Proposal:** To increase competition for STBs, the FCC is proposing three core information streams that must pass from MVPDs to the creators of competitive devices or apps:
 1. **Service discovery:** information about what programming is available to the consumer (essentially a programing guide).
 2. **Entitlements:** Information about what a device is allowed to do with content, such as recording.
 3. **Content delivery:** The video programming itself (both linear and On-Demand).
- **Standards:** To encourage innovation, The FCC recommends the streams be made available in a format that conforms to specifications set by an independent, open-standards body.
- **Security:** The proposal requires MVPDs to offer at least one content protection system that is openly licensed on reasonable and non-discriminatory terms to ensure that they do not use their security choices for anti-competitive purposes.
- **Programming:** The FCC anticipates that the ability of consumers to access all of their content in one place will lead to more and better programming, especially from minority, independent, and international content providers.
- **Copyright Protection:** The proposal maintains strong protections for copyrighted content and intends to maintain existing relationships between MVPDs and content providers (no change to existing content distribution deals or licensing terms).
- **Consumer Protection:** The proposal seeks to ensure that consumer protections, such as emergency alerting, privacy, and children's advertising restrictions, will apply.

Source: FCC

Impact To MVPDs Likely Negligible

1. **Set-top-box revenue is just video revenue:** Cable companies aren't in the STB business; boxes are just a cost of doing business. If this revenue stream is threatened, we assume the cable industry will simply shift the revenue from boxes to service as they go through their annual rate adjustment process. After all, box revenues just go to help pay rising content costs. The wireless industry did this in 2012 when voice and text revenue was threatened.
2. **Cable doesn't make much money on boxes:** STB revenue may be significant at \$9BN; however, after factoring in the cost of the box and the cost associated with installing, servicing and maintaining it, we estimate they only generate about \$5 / sub / month in FCF. With some reclassification, they could see FCF increase if subs self-source boxes.
3. **Demand is questionable:** Households have been able to purchase alternative boxes for ~15 years and according to FCC less than 1% of boxes in service are not provided by the MVPD. There are a few structural and historical reasons for this; however, the biggest driver is likely the fact that households don't want the hassle of purchasing and installing their own box that will not be serviced by their Cable company.
4. **Cable may have more to gain than lose:** We think consumers ultimately want all of their content, whether they purchase it from their Cable company or some other source like Netflix, integrated into a single user interface that they can search across seamlessly (like Sonos for video). Cable is well positioned to deliver a great product with the requisite functionality. If they do, they would have some data on household viewing across all content; not just Cable content. This would be valuable data that Cable can monetize.
5. **Implementation will be...challenging:** We came across a long list of implementation challenges in our conversations with industry participants. Not least among these is the fact that there are a host of parties that are affected by the proposed changes that aren't MVPDs and that may not even be regulated by the FCC. When it comes down to nailing down the specifics and agreeing to standards the initiative may prove unfeasible.

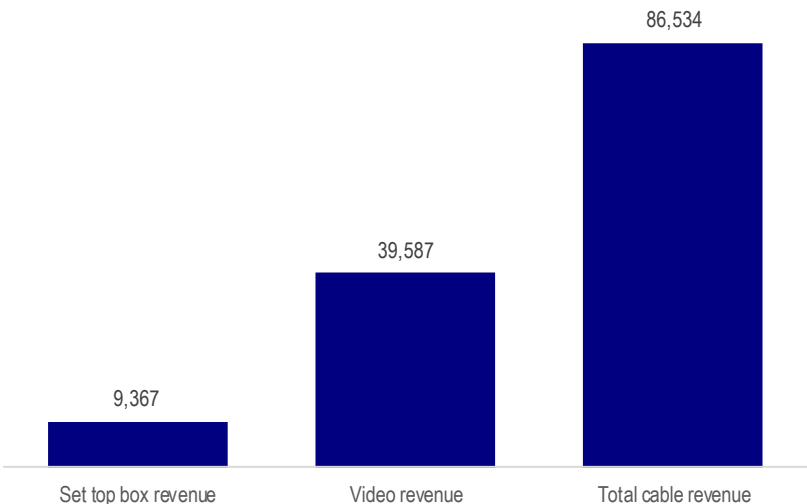
Source: Company data, New Street Research estimates

Set Top Boxes Account For ~11% Of Cable Revenue

The FCC has stated that the average US household pays \$231 annually in set top box rental fees. Applying this rate to the large four cable companies shows that collectively subscribers pay \$9.4BN per year in rental fees. This amounts to 24% of video revenue and 11% of total cable revenue for the top four players in the industry.

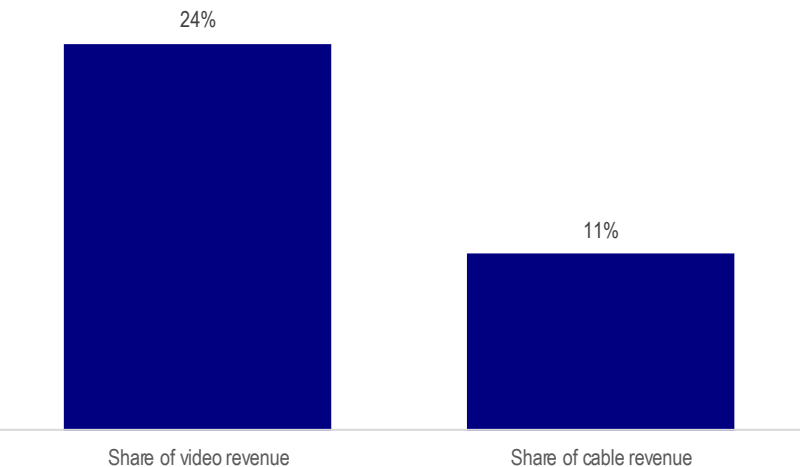
Cable Industry Set Top Box Rental Revenue

USD, millions



Set Top Box Share Of Cable Industry Revenue

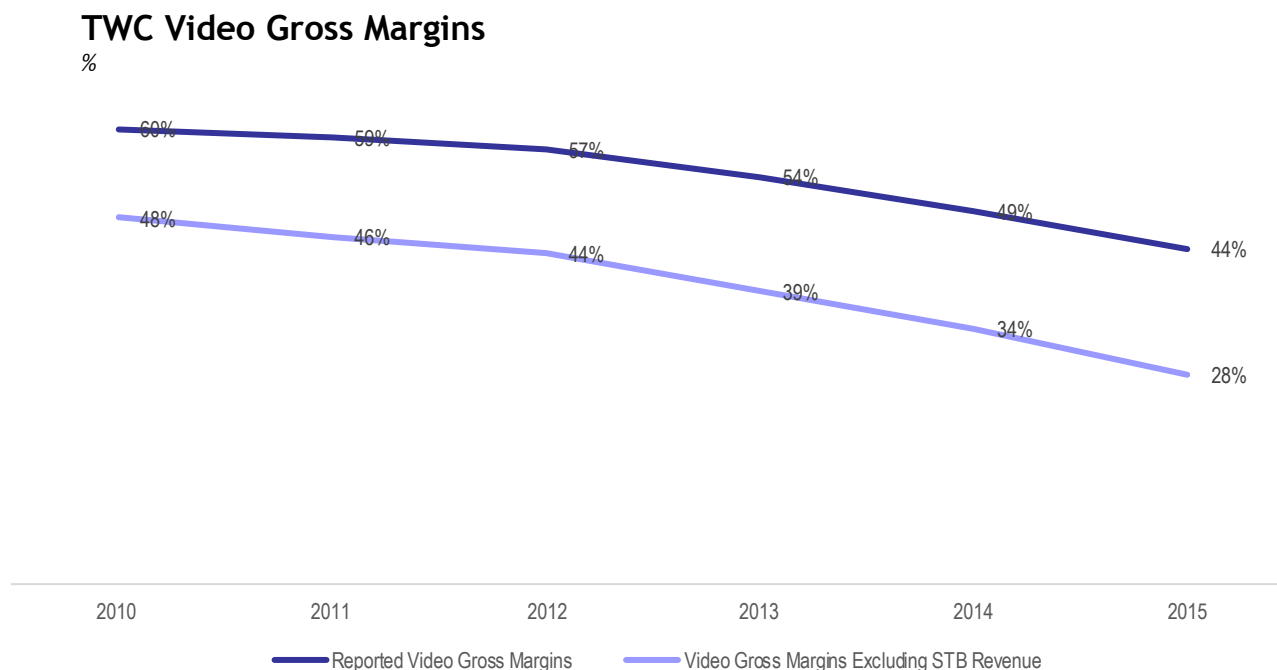
%



Source: Company data, <http://www.markey.senate.gov/news/press-releases/markey-blumenthal-decry-lack-of-choice-competition-in-pay-tv-video-box-marketplace>,

Set Top Box Fees Are Just An Allocation Of Video Revenue

Cable companies aren't in the set top box business - boxes are just a cost of doing business. The Cable industry has used set top box rental fees as a creative way to hide price increases over the years. TWC is the only company that discloses equipment rental and DVR revenues; if we look at gross video margins as TWC reports them versus margins excluding set top box and DVR revenues, margins would be 16% lower in 2015. This spread has widened over the years as content costs have climbed faster than revenues - in 2010, set top box revenues only boosted margins by 12%. If future legislation prevented cable companies from leasing their cable boxes to subscribers, we believe they would simply have to reallocate revenue from set top box rentals to service in order to breakeven on their video product.



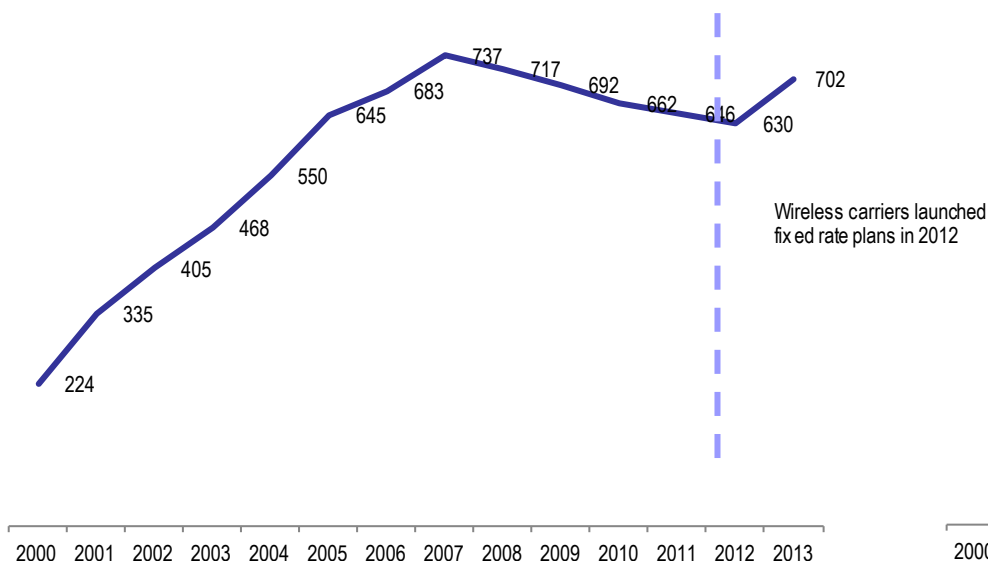
Source: Company data, New Street Research estimates

Wireless Case Study

The wireless industry faced a similar issue when voice and text messages started going over the top. The industry then changed from a pricing structure based on fixed data and metered voice to the reverse without impacting ARPU and EBITDA. The companies simply just changed the bill during the upgrade cycle. We don't think Cable companies would struggle implementing these changes since they change the bill essentially every year as the initial discounts and promotions unwind.

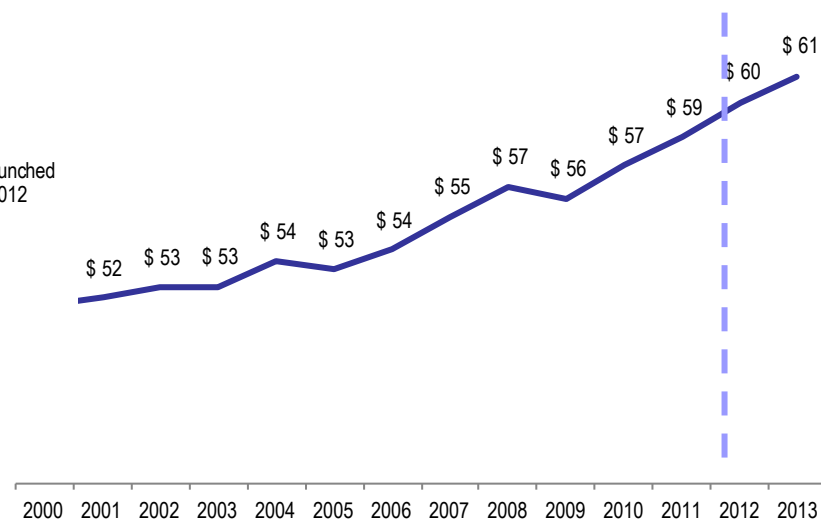
Wireless Voice Minutes Of Use

Monthly voice minutes per subscriber



Retail Wireless Service ARPU

Monthly USD per subscriber



Source: CTIA, New Street Research estimates

Boxes Don't Generate Much Cash Flow

Again using TWC as a template, we calculate that set top box and DVR rental fees contribute \$16 in monthly video ARPU.¹ While this sounds like a high number, if TWC no longer provided set top boxes they could also lower their costs since they would no longer need to roll a truck to perform the installation nor bear the upfront cost of the box. We estimate that after backing out these costs, TWC would potentially lose \$4 in unlevered free cash flow per subscriber. Since we estimate that TWC only generates \$2 in cash flow per video subscriber, an elimination of set top box fees could wipe out the remaining cash flow generated from the video business. We think it is highly likely that the company would increase service revenue in order to offset this decline should it ever materialize.

TWC Set Top Box Rental Fee Matrix

\$ per box, monthly

	Monthly Rental Cost	DVR HH	HD/SD only HH	Secondary DTA HH	Primary DTA HH
DVR	\$12	1.0	0.0	0.0	0.0
HD	\$8	1.5	2.5	1.0	0.0
DTA	\$1	0.0	0.0	1.5	2.5
Total		\$23	\$19	\$9	\$2
Percent of homes		40%	25%	25%	10%
Total Average	\$16				

TWC Set Top Box Rental Cash Flow

\$ per subscriber, monthly

Set top box rental fee per home	\$16
- Amortized CPE capex per home	\$4
- Amortized truck roll cost per home	\$3
- Repair & maintenance	\$5
= Set top box cash flow per sub	\$4
memo: CPE capex per home	\$256
memo: CPE capex	\$100
memo: Customer life (months)*	40
memo: Set top box life (months)	60

¹ We built a set top box rental fee matrix to triangulate the average price based on the mix of devices within their homes. This can be adjusted based on the various pricing and box mix at other cable companies.

* Assumes average customer churn of 2.5%

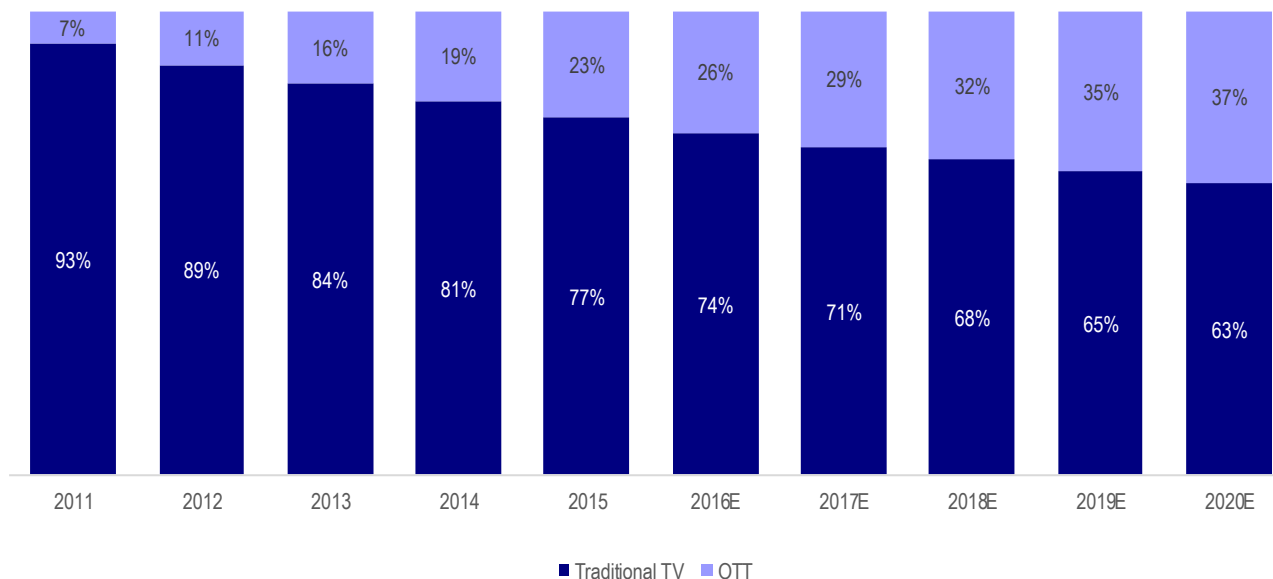
Source: Company data, New Street Research estimates

The Cable Industry Is Missing The Point

We don't think cable companies are fighting the set top box legislation to maintain set top rental revenue; instead, we believe they want to keep their boxes in the market to have access to the data on how subscribers consume content, especially as content shifts over the top. Today, third party services estimate that adults consume only 23% of video content through non-traditional TV mediums; however, extrapolating the current trend shows that this will likely grow to at least 37% over the next five years. Simplistically, the addressable opportunity for new set top box entrants is growing and we believe cable companies are trying to protect their position for monetizing data on subscriber viewing behavior.

Time Spent Watching Video

%



Source: [www.eMarketer.com](#) ([LINK](#)), New Street Research estimates

Section I: Broadband Industry Trends

Section I: Broadband

i. Industry Trends

Revenue Growth	32
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Subscriber Share	35
Net Adds	36
Penetration of Homes Passed	37

ii. Company Comparison

Revenue Growth	39
ARPU Growth	40
Subscriber Growth	41
Subscriber Share	42
Net Adds	43
Penetration of Homes Passed	44

Section II: Pay-TV

i. Industry Trends

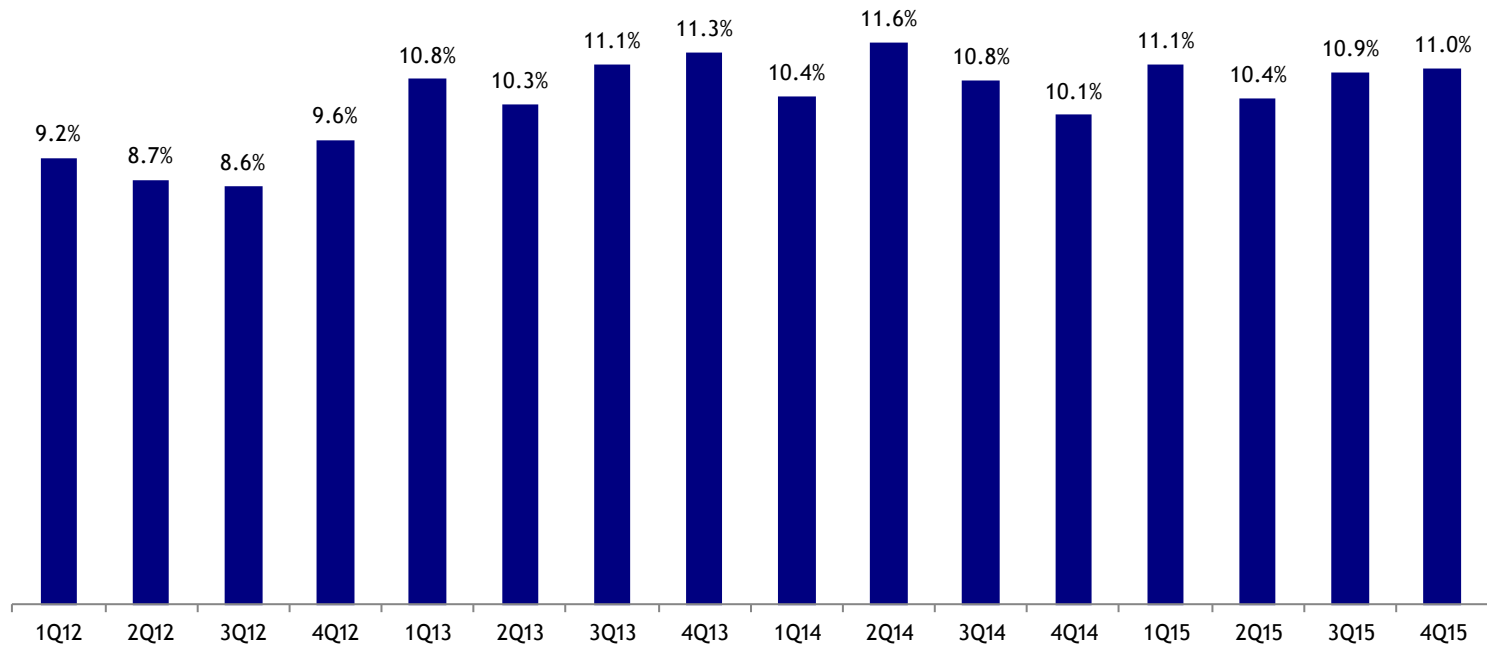
Revenue Growth	46
ARPU Growth	47
Subscriber Growth	48
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Net Adds	50
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Programming Costs per Subscriber	52
Programming Costs per Subscriber Growth	53
Gross Profit per Subscriber	54
Gross Margin Growth	55

ii. Company Comparison

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Subscriber Share	61
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Penetration of Homes Passed	63
Programming Costs per Subscriber	64
Programming Costs per Subscriber Growth	65
Gross Profit per Subscriber	66
Gross Margin Growth	67

Broadband Revenue Growth (y/y)

Broadband revenue growth rose to 11.0% y/y.

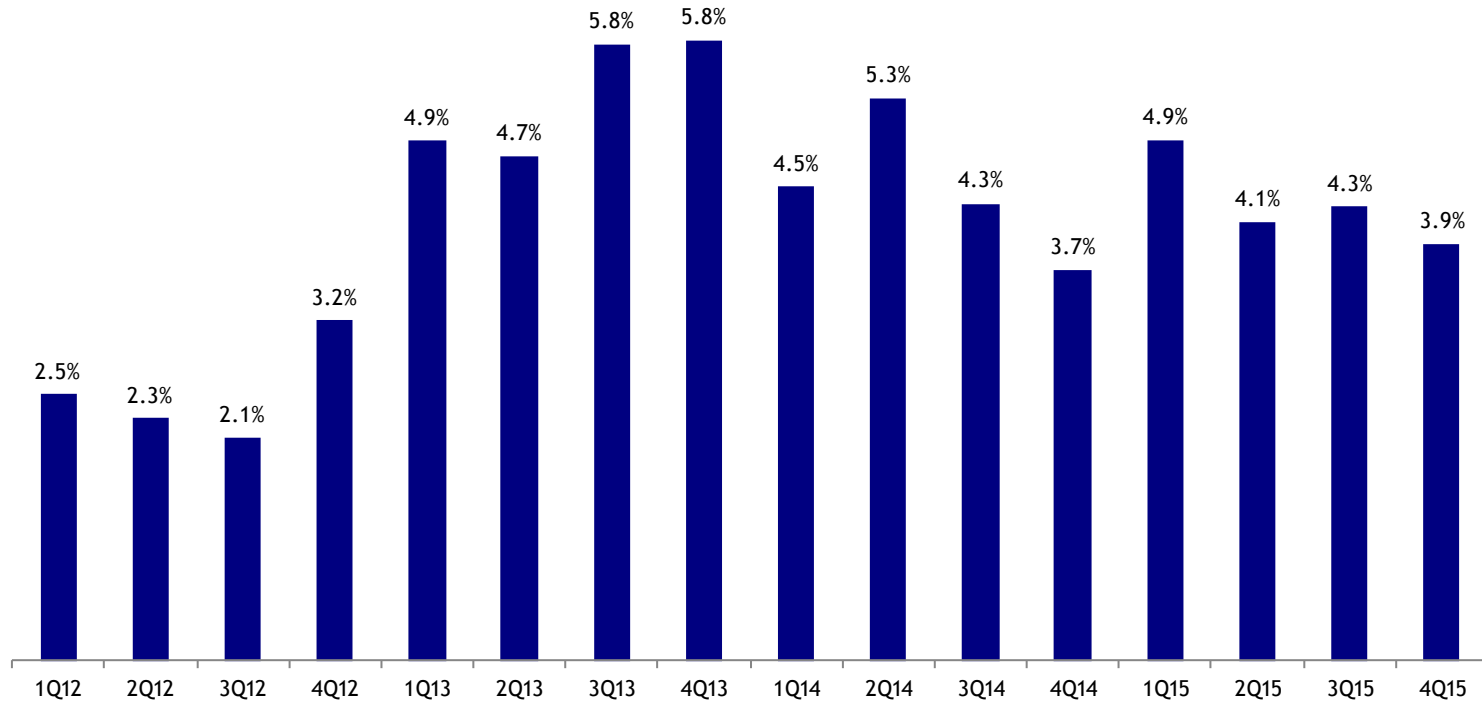


Includes: CMCSA, TWC, CHTR, and CVC.

Source: Company Data, NSR estimates.

Broadband ARPU Growth (y/y)

Broadband ARPU growth slowed 40bps to 3.9%.

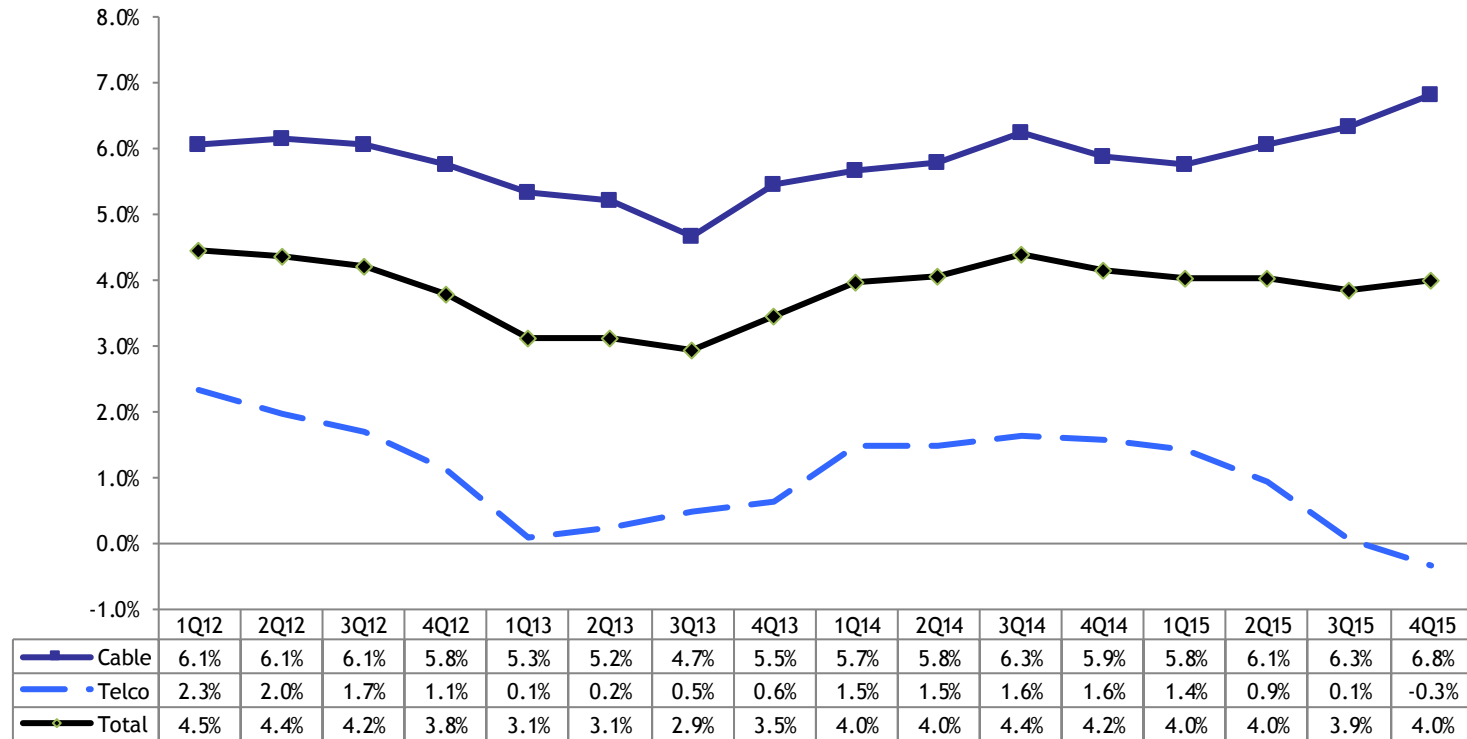


Includes: CMCSA, TWC, CHTR, and CVC.

Source: Company Data, NSR estimates.

Broadband Subscriber Growth (y/y)

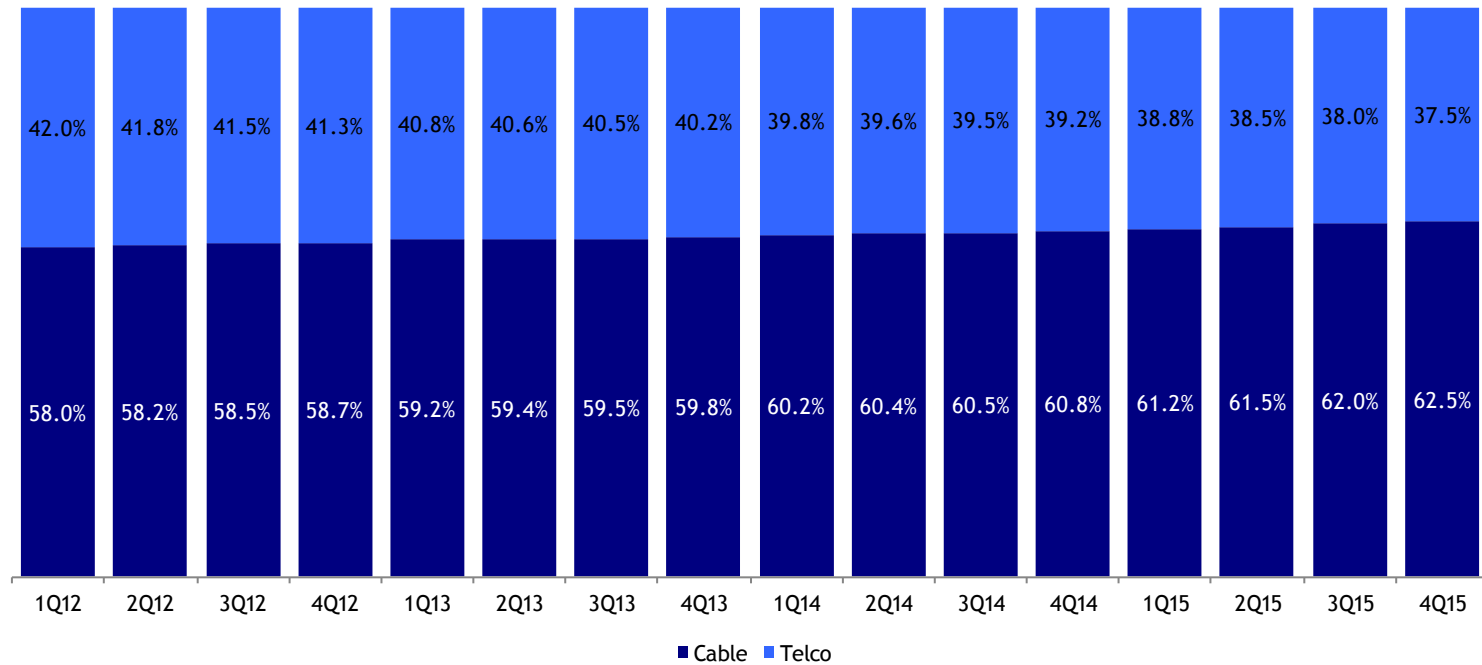
Industry broadband sub growth remained steady at 4.0% y/y. Cable sub growth accelerated to 6.8% y/y while Telco subs declined by 0.3%.



Includes: CMCSA, TWC, CHTR, CVC, Cox, Bright House, Suddenlink, Mediacom, RCN, AT&T U-Verse, Verizon FiOS, Frontier, Windstream, and CenturyLink
Source: Company Data, NSR estimates.

Broadband Subscriber Share

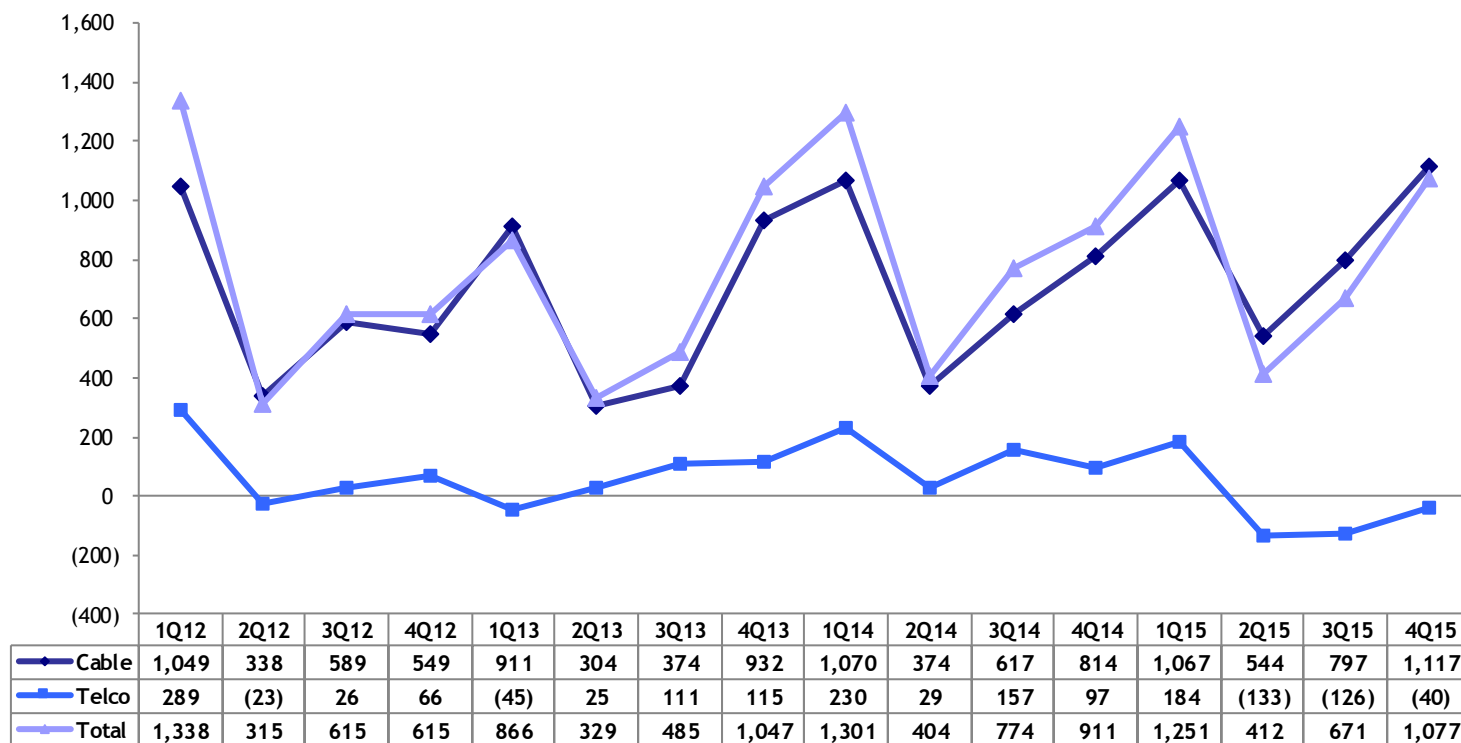
Cable has been steadily gaining market share over the last several years, with market share currently at 62.5%.



Includes: CMCSA, TWC, CHTR, CVC, Cox, Bright House, Suddenlink, Mediacom, RCN, AT&T U-Verse, Verizon FiOS, Frontier, Windstream, and CenturyLink
Source: Company Data, NSR estimates.

Broadband Net Adds

Industry net adds increased 166k Y/Y to 1.1MM.
Cable adds increased 303k Y/Y while Telco losses were down 138k Y/Y.

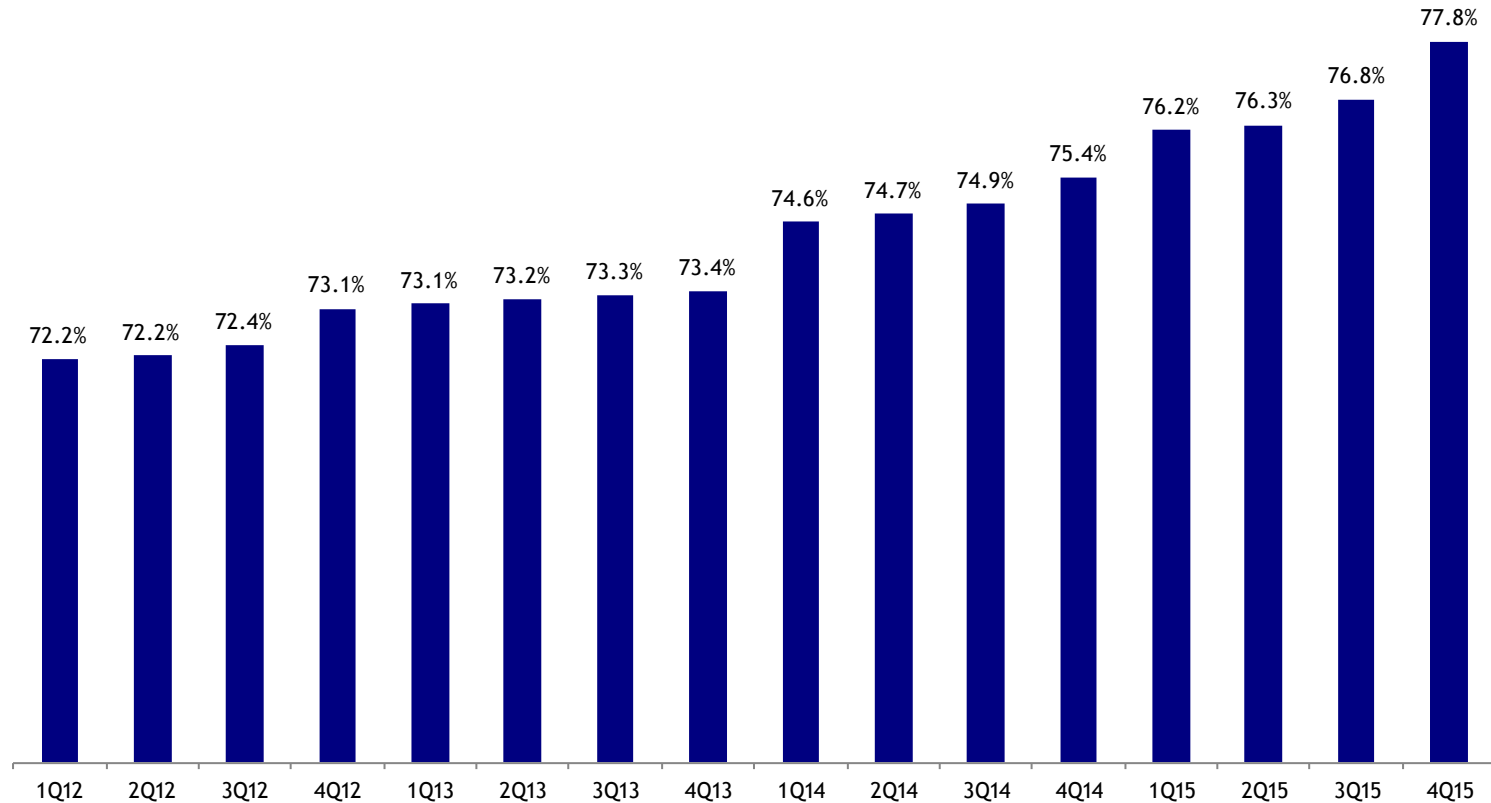


Includes: CMCSA, TWC, CHTR, CVC, Cox, Bright House, Suddenlink, Mediacom, RCN, AT&T U-Verse, Verizon FiOS, Frontier, Windstream, and CenturyLink

Source: Company Data, NSR estimates.

Penetration Of Homes Passed

Overall broadband penetration is now at 77.8%, increasing 240bps y/y. We expect penetration gains to continue at about this rate for the next several years as home broadband connections continue to increase in utility.



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

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Section I: Broadband

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Section II: Pay-TV

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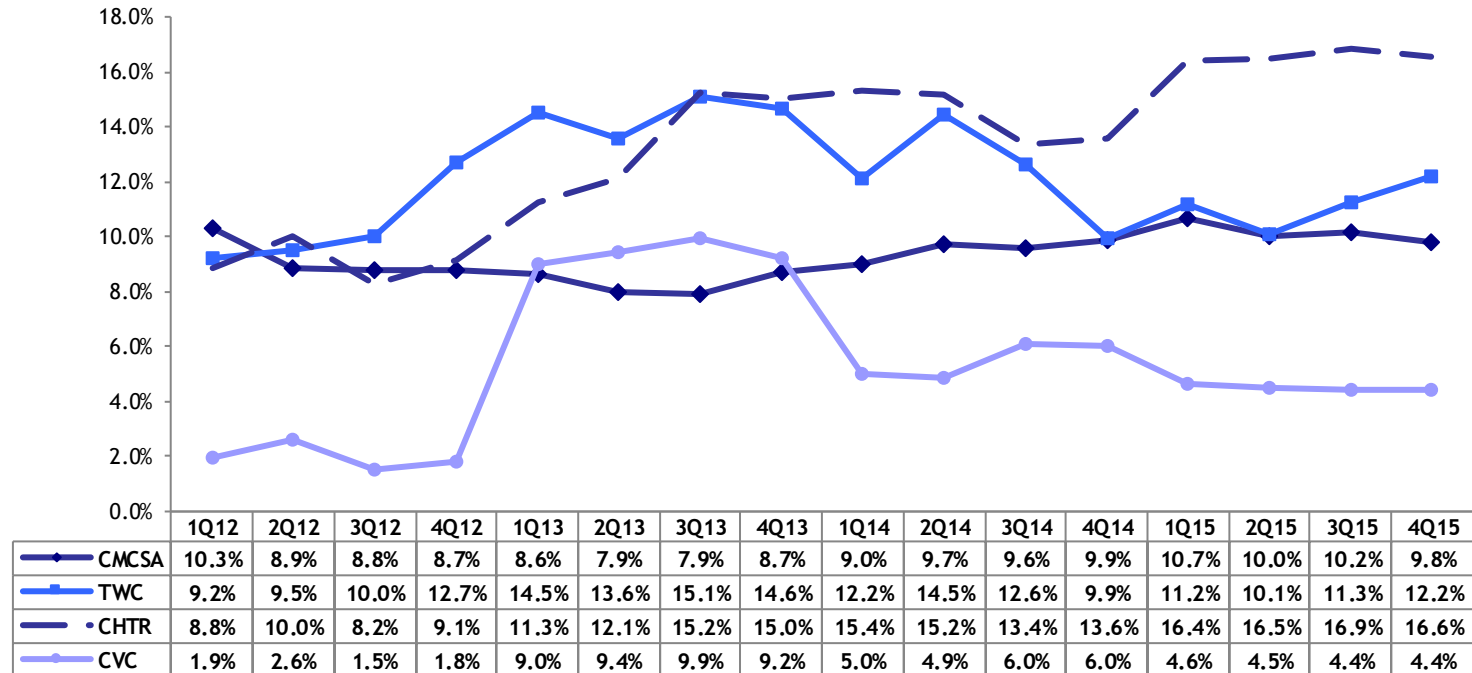
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Broadband Revenue Growth (y/y)

Charter experienced the highest broadband revenue growth, at 16.6% y/y. CVC experienced the slowest growth at 4.4% y/y.

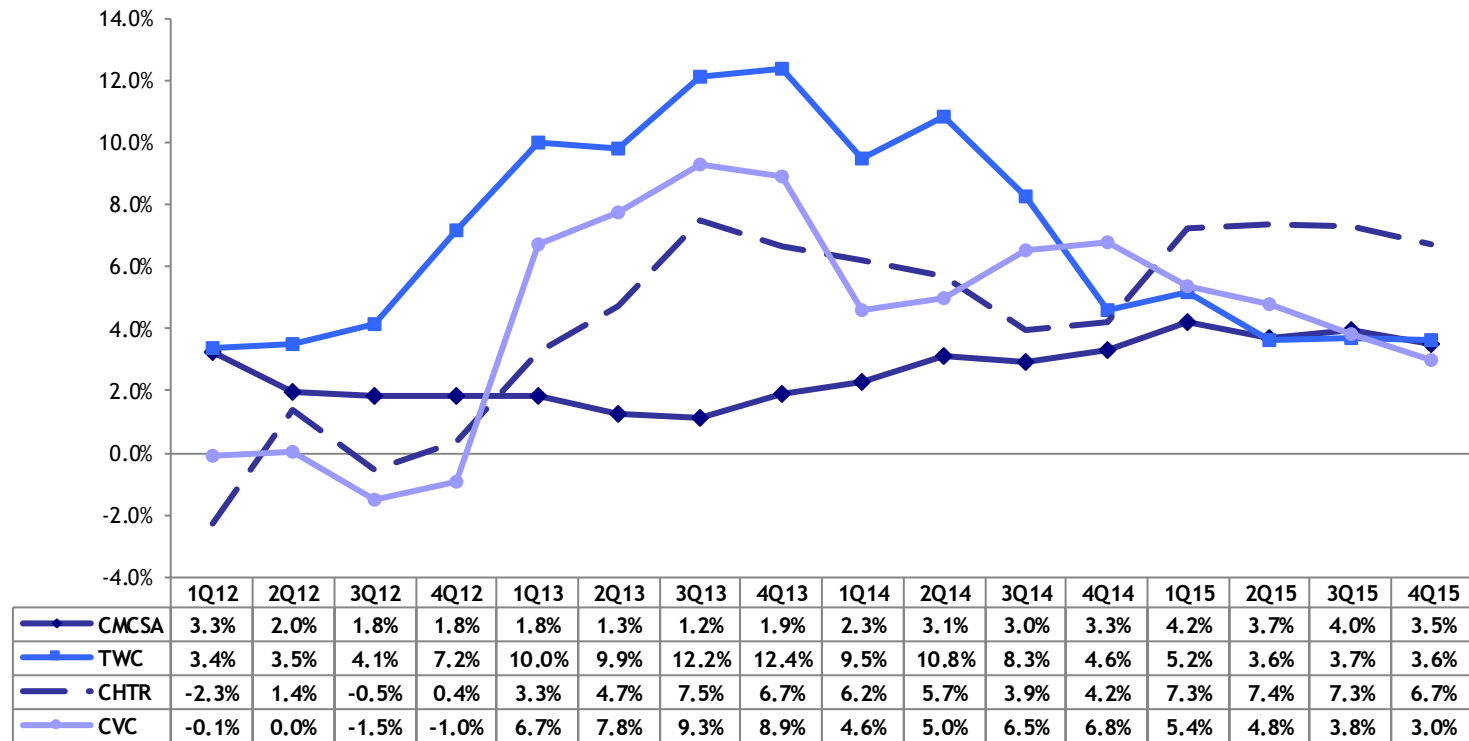


Includes: CMCSA, TWC, CHTR, and CVC.

Source: Company Data, NSR estimates.

Broadband ARPU Growth (y/y)

CHTR experienced the highest broadband ARPU growth at 6.7% y/y, while CVC grew the slowest at 3.0% y/y.

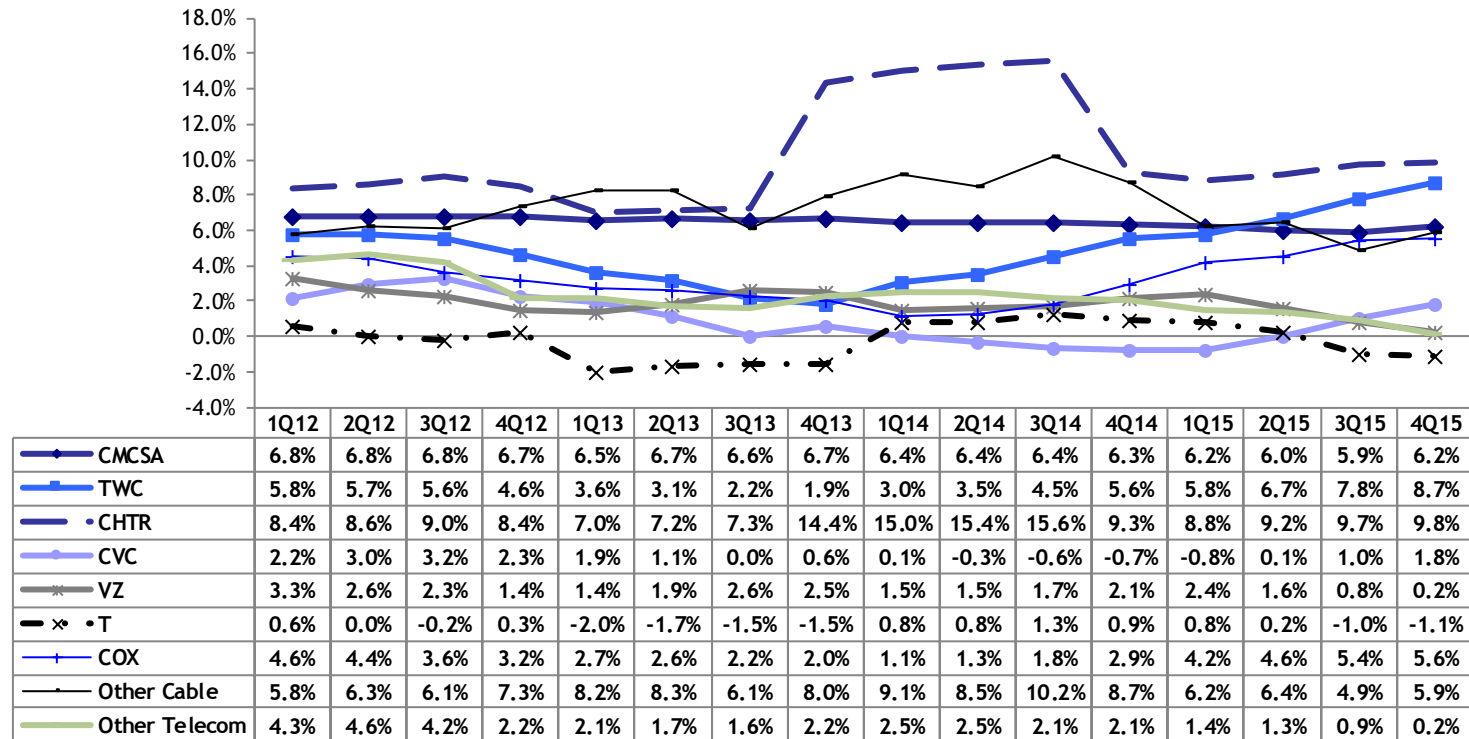


Includes: CMCSA, TWC, CHTR, and CVC.

Source: Company Data, NSR estimates.

Broadband Subscriber Growth (y/y)

Broadband subscribers grew the most at Charter at 9.8% and declines accelerated at AT&T and VZ.

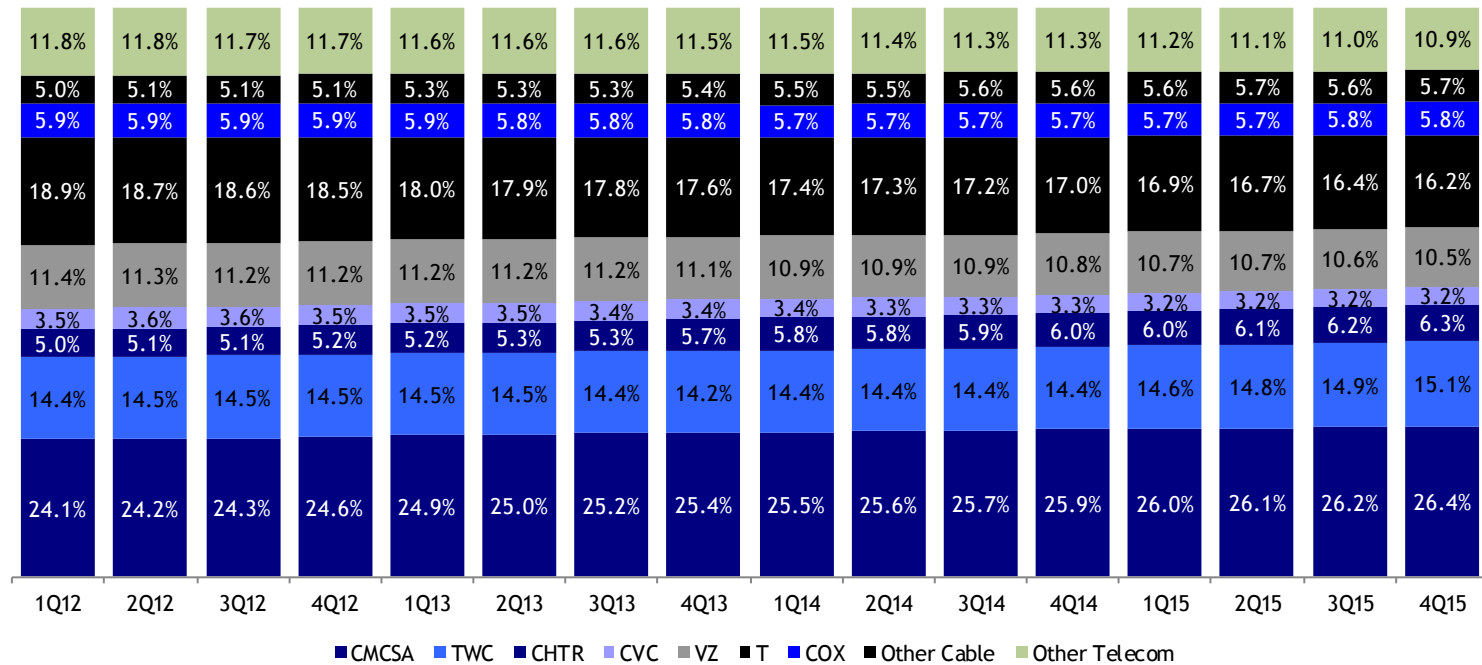


Other Cable includes: Bright House, Suddenlink, Mediacom, RCN; Other Telecom includes: Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

Broadband Subscriber Share

CMCSA & TWC gained the most share in the quarter at 15-20bps, while AT&T continued to lose share at 25bps q/q.

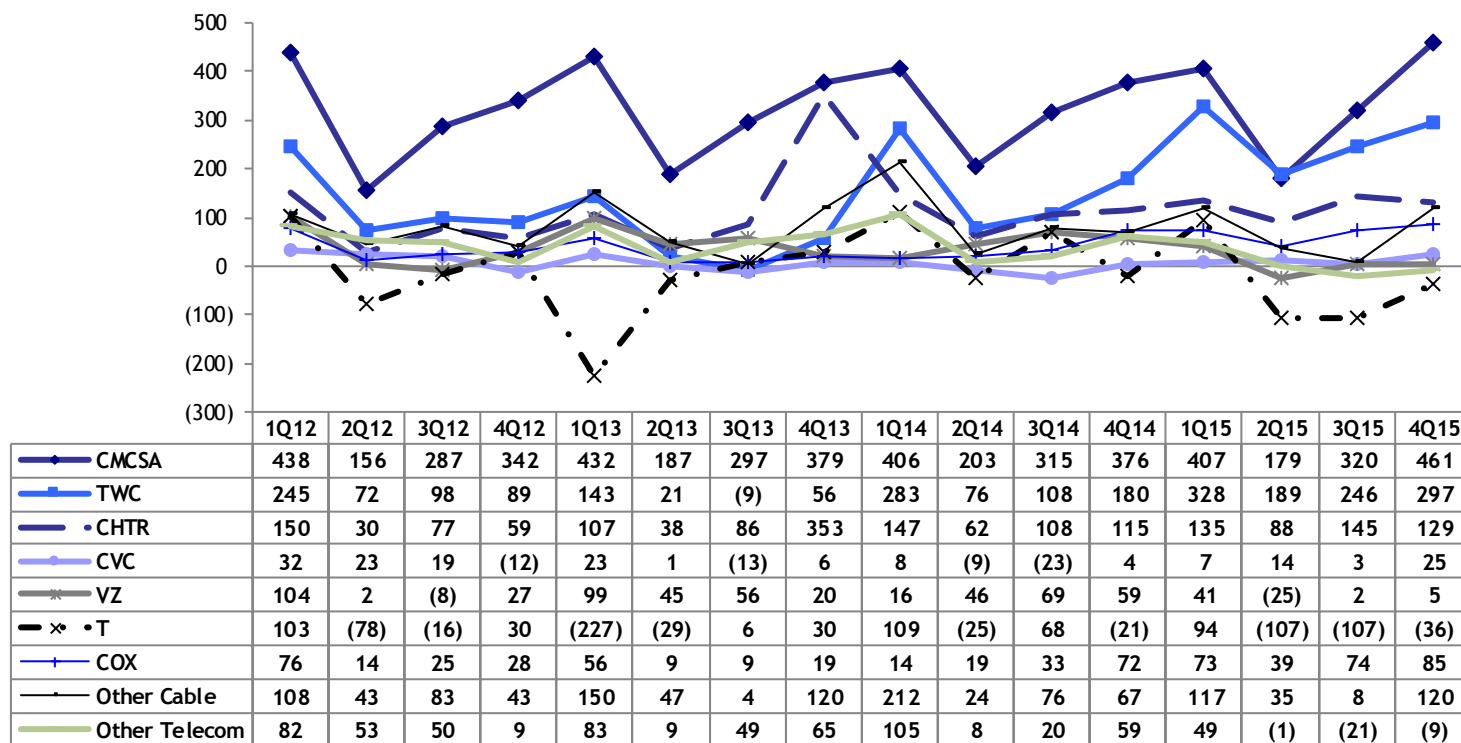


Other Cable includes: Bright House, Suddenlink, Mediacom, RCN; Other Telecom includes: Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

Broadband Net Adds

T and Other Telco experienced negative net adds this quarter. CMCSA added the most subs, followed by TWC and CHTR in the fourth quarter.

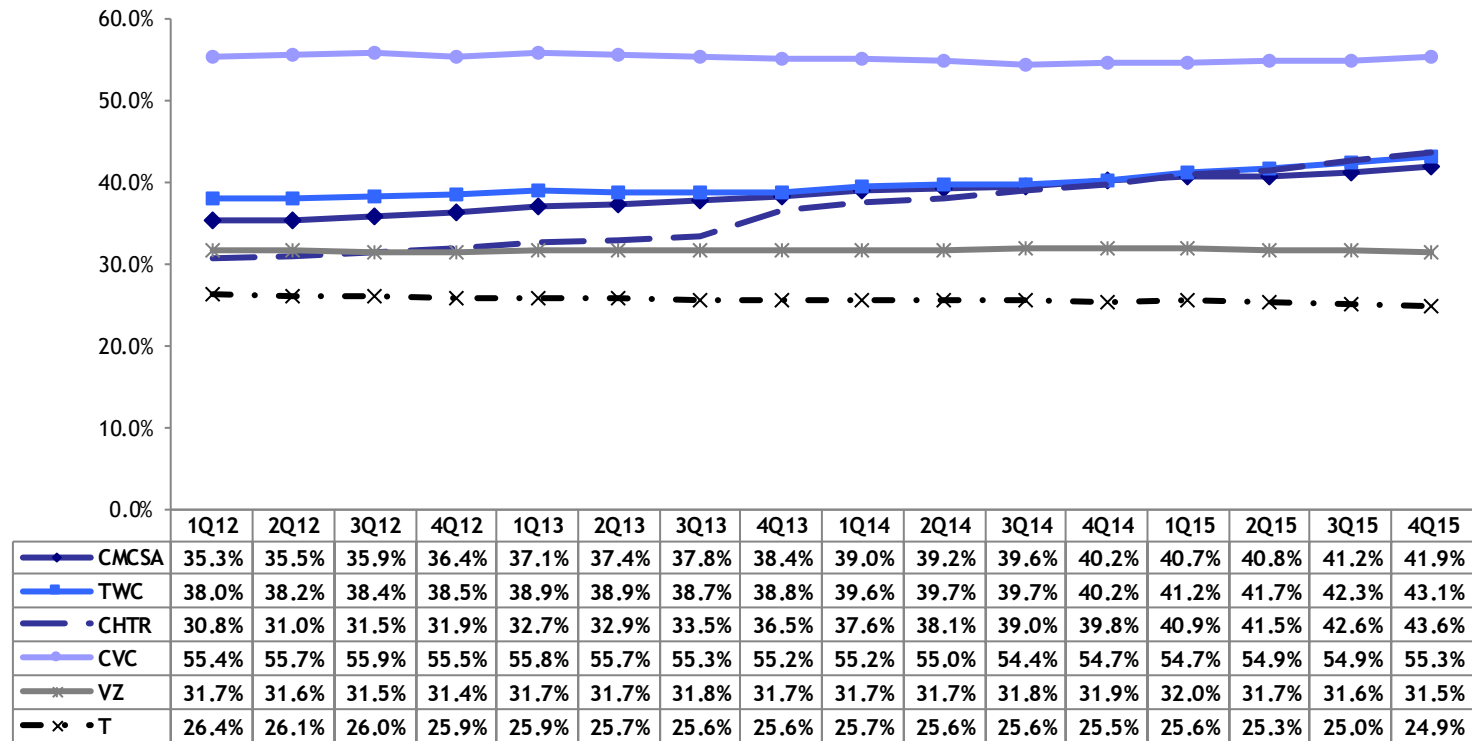


Other Cable includes: Bright House, Suddenlink, Mediacom, RCN; Other Telecom includes: Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

Penetration Of Homes Passed

Penetration at CMCSA, TWC, and CHTR all lag penetration at CVC by a wide margin (as much as 1300bps). This has converged ~600bps over the last few years, and we expect this to continue given comparative competitive overlap.



Source: Company Data, NSR estimates.

Section II: Pay-TV Industry Trends

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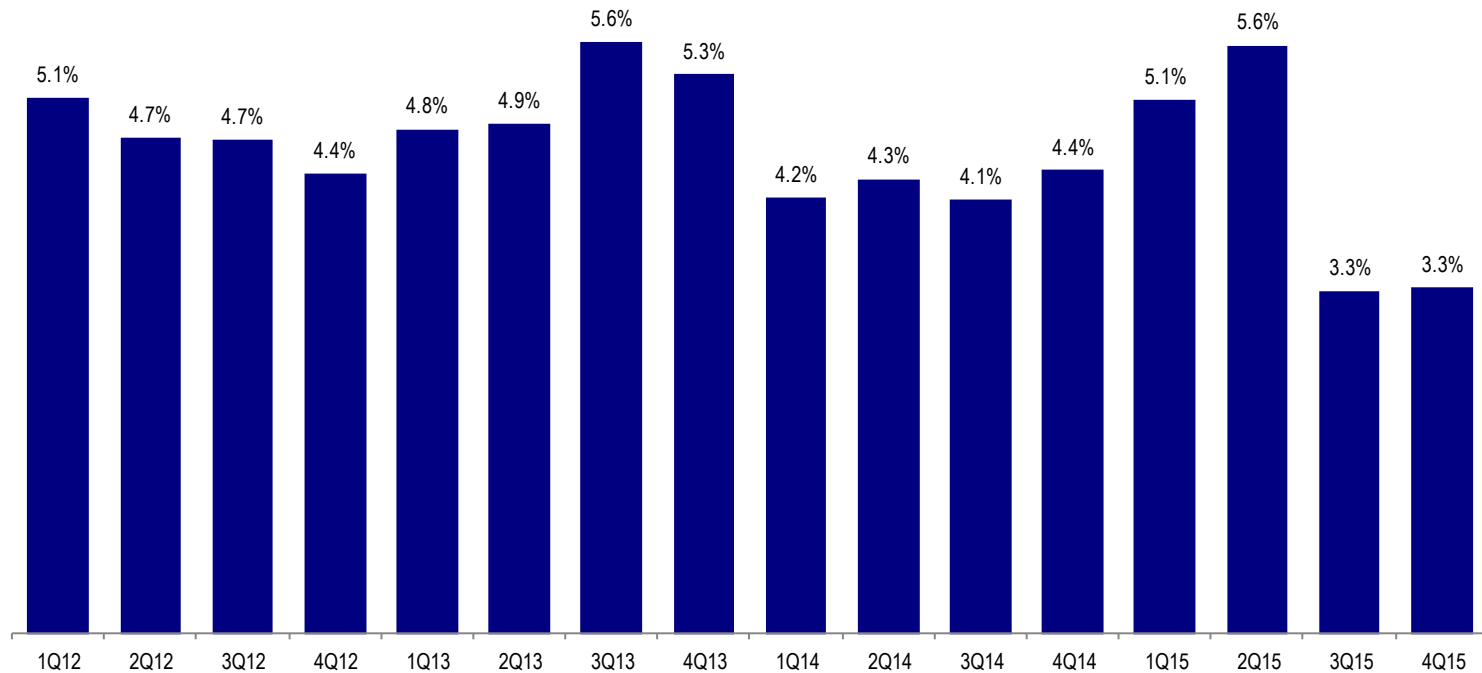
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Pay-TV Revenue Growth (y/y)

Pay-TV revenue growth remained steady at 3.3% y/y as accelerating growth at Cable and DTV were offset by slowing growth at T and VZ.

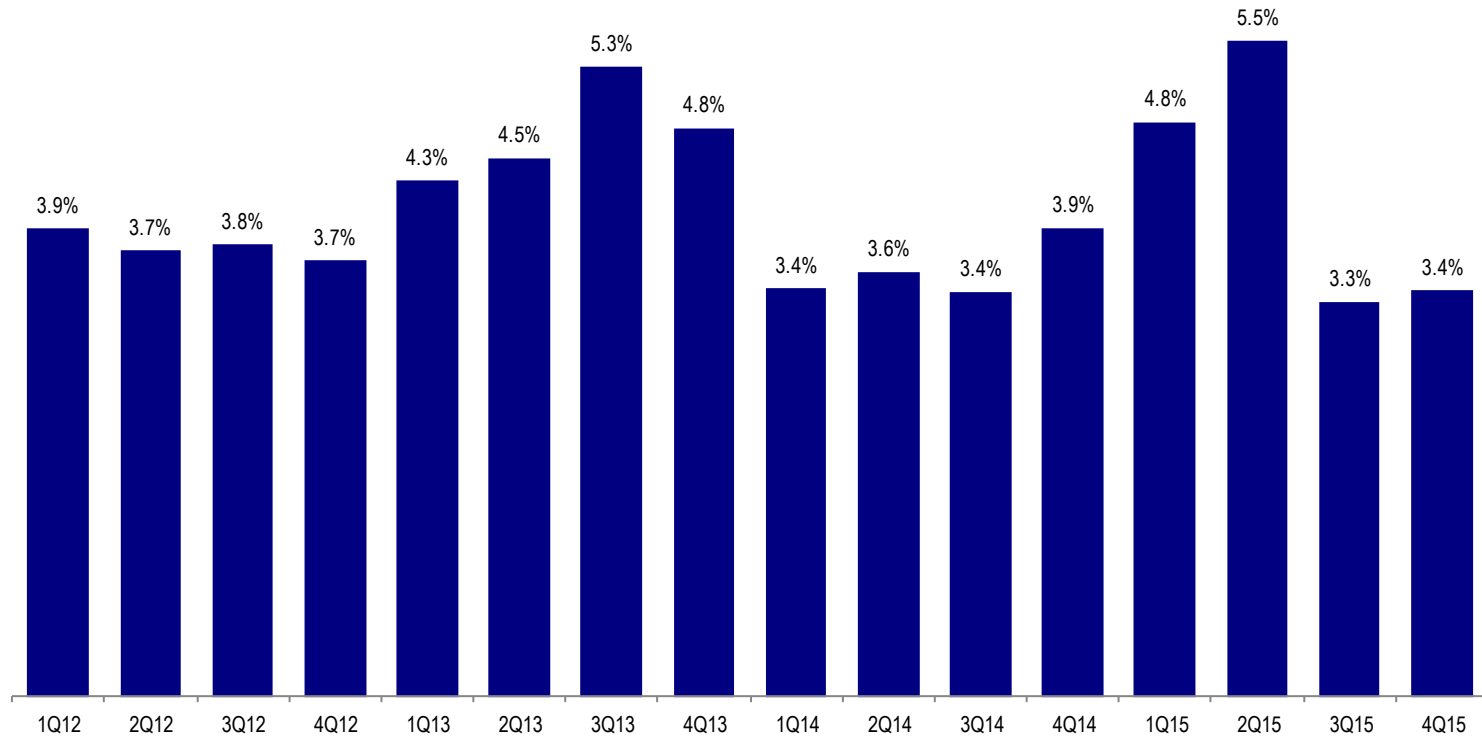


Includes: CMCSA, TWC, CHTR, CVC, DISH, VZ and T/DTV.

Source: Company Data, NSR estimates.

Pay-TV ARPU Growth (y/y)

Pay-TV ARPU growth also remained steady at 3.4% y/y.

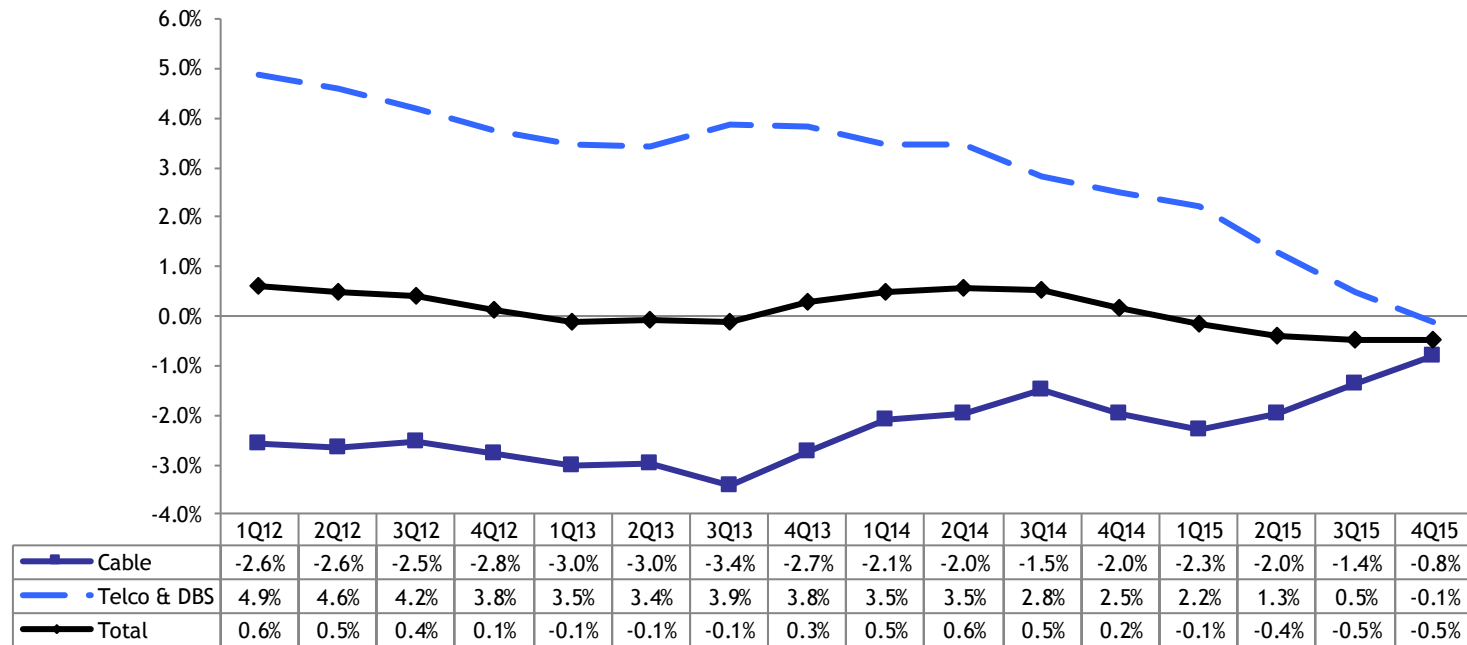


Includes: CMCSA, TWC, CHTR, CVC, DTV (US), DISH, VZ and T.

Source: Company Data, NSR estimates.

Pay-TV Subscriber Growth (y/y)

Pay-TV subscribers declined -0.5%, with Cable trends improving modestly, and Telco & DBS turning negative for the first time.

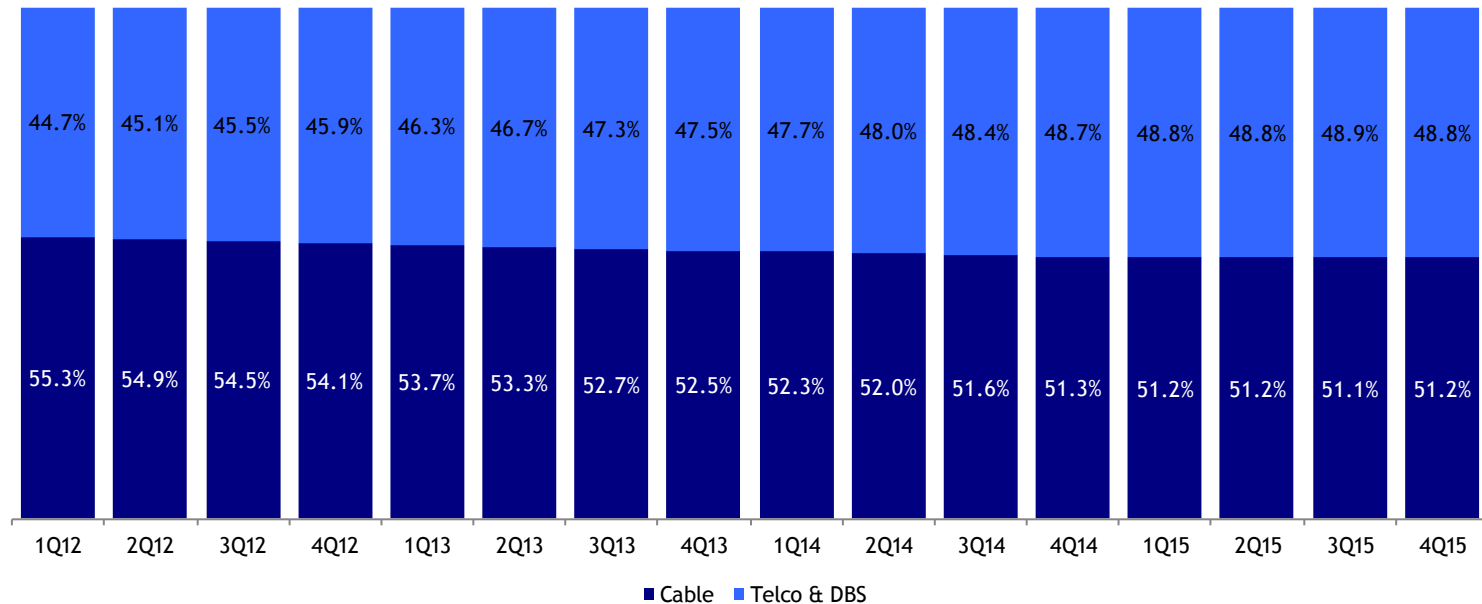


Includes: CMCSA, TWC, CHTR, CVC, Cox, Bright House, Suddenlink, Mediacom, RCN, DTV (US), DISH, AT&T U-Verse, Verizon FiOS, Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

Pay-TV Subscriber Share

Telco and Cable share remained steady this quarter, after years of cable steadily losing share.

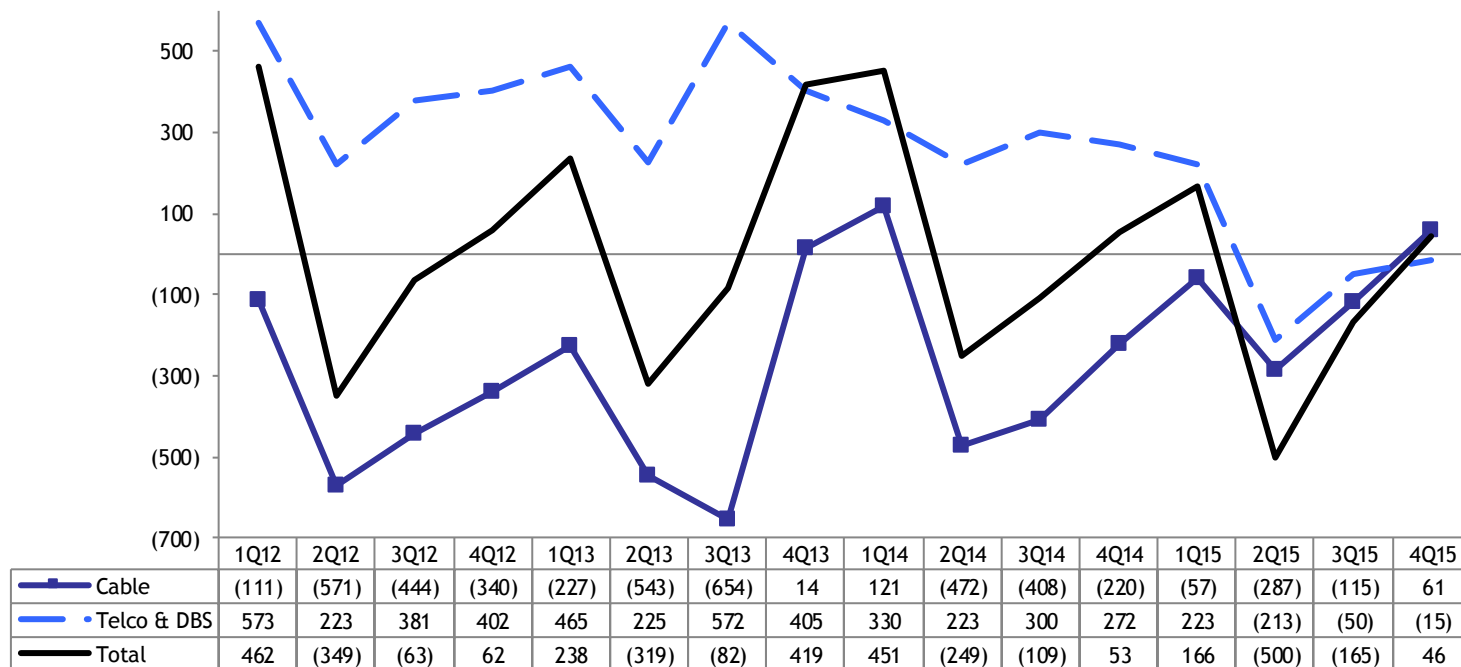


Includes: CMCSA, TWC, CHTR, CVC, Cox, Bright House, Suddenlink, Mediacom, RCN, DTV (US), DISH, AT&T U-Verse, Verizon FiOS, Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

Pay-TV Net Adds

Pay-TV net adds were positive this quarter, as Cable gained subs for the first time since 1Q14 and Telco & DBS losses moderated sequentially.

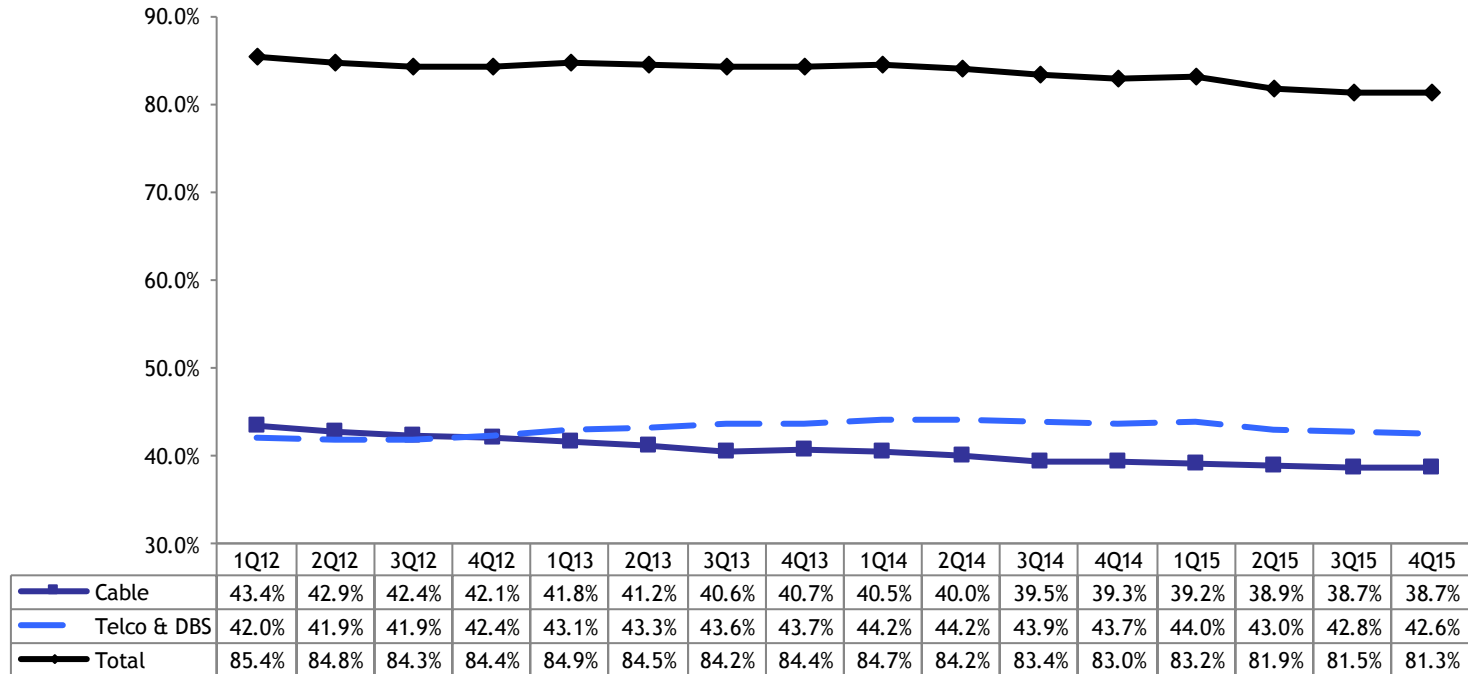


Includes: CMCSA, TWC, CHTR, CVC, Cox, Bright House, Suddenlink, Mediacom, RCN, DTV (US), DISH, AT&T U-Verse, Verizon FiOS, Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

Penetration Of Homes Passed

Penetration of Homes Passed decreased 17bps sequentially. Cable penetration increased 2bps while Telco & DBS lost 19bps.

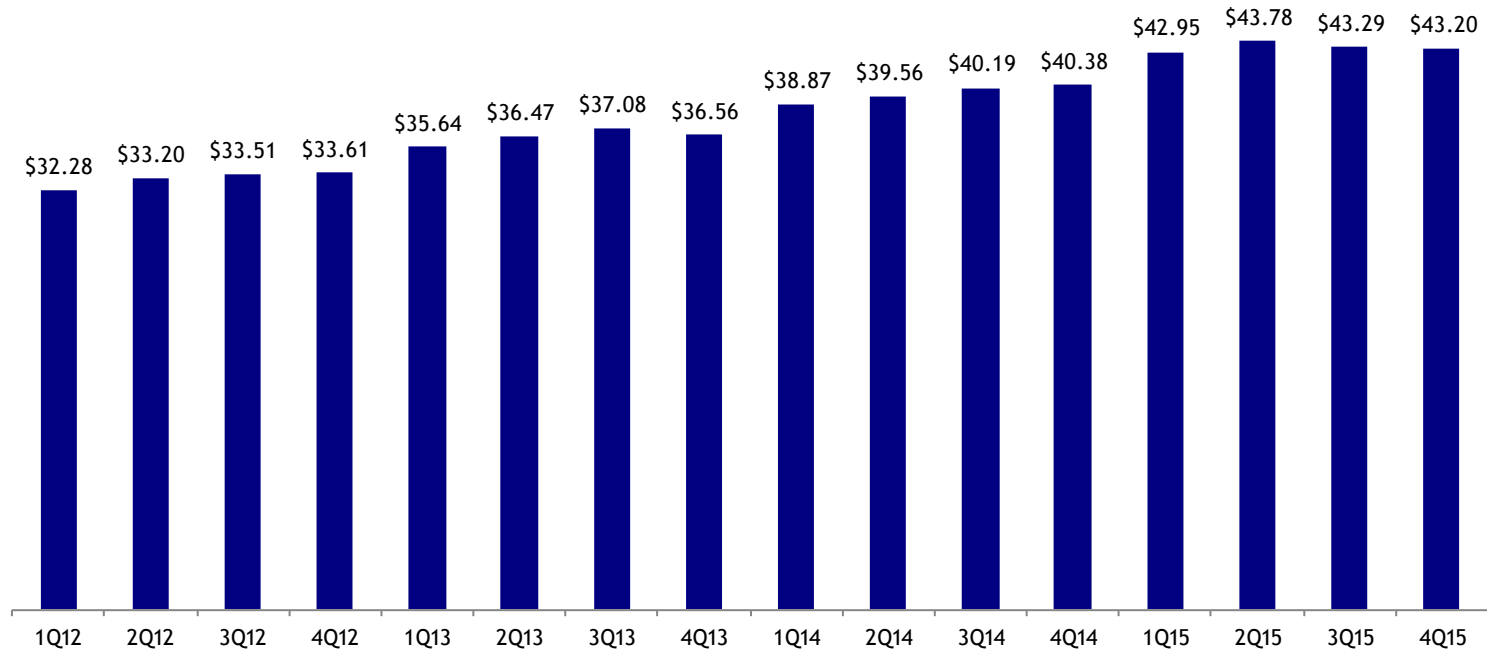


Includes: CMCSA, TWC, CHTR, CVC, DTV (US), DISH, AT&T U-Verse and Verizon FiOS.

Source: Company Data, NSR estimates.

Programming Cost/Sub

Programming costs declined sequentially due to the cadence of contract renewals.

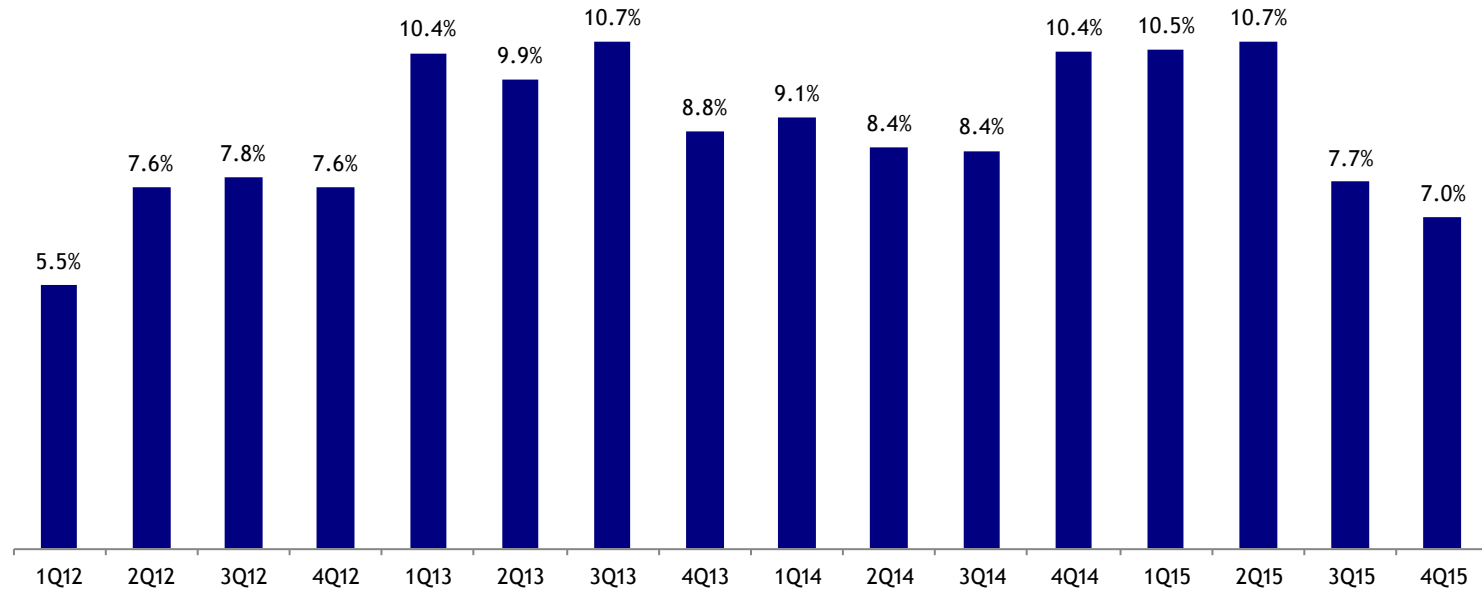


Includes: CMCSA, TWC, CHTR, and CVC.

Source: Company Data, NSR estimates.

Programming Cost/Sub Growth (% y/y)

Programming cost growth fell to 7.0% y/y this quarter.

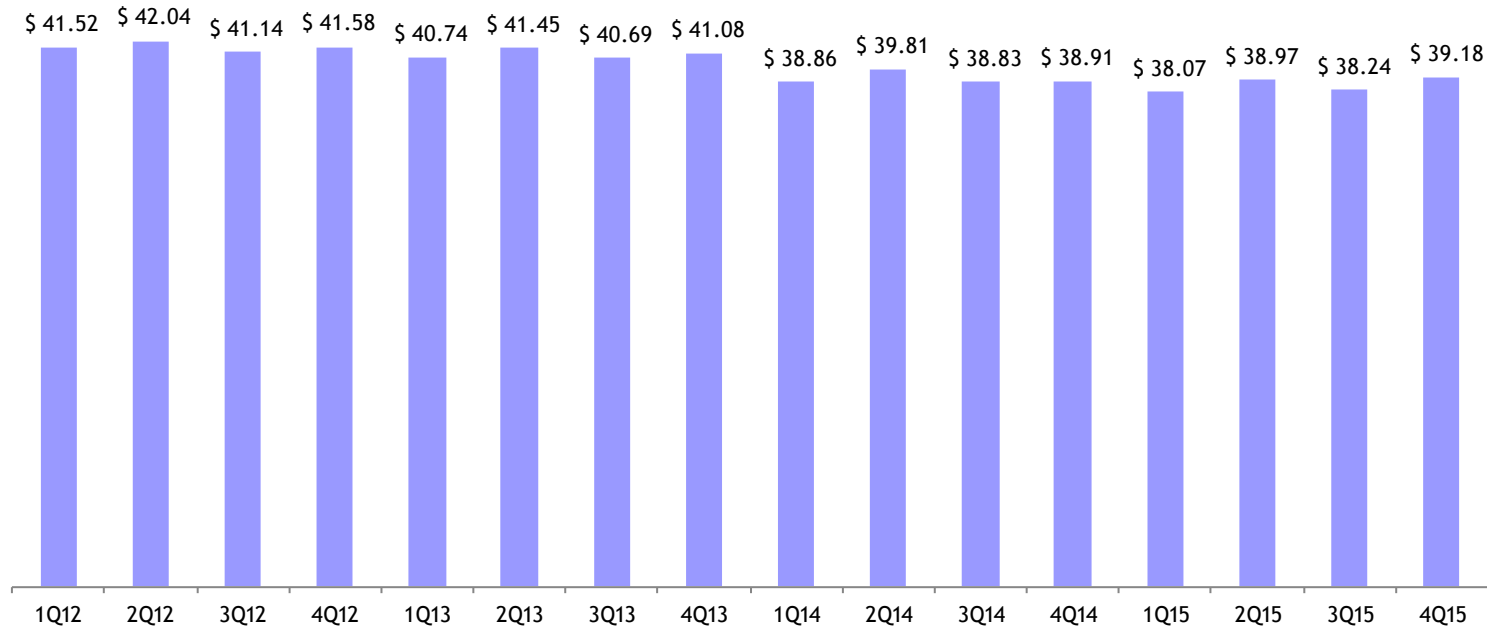


Includes: CMCSA, TWC, CHTR, and CVC.

Source: Company Data, NSR estimates.

Pay-TV Gross Profit Per Sub

Gross profits per sub held steady at about \$39.

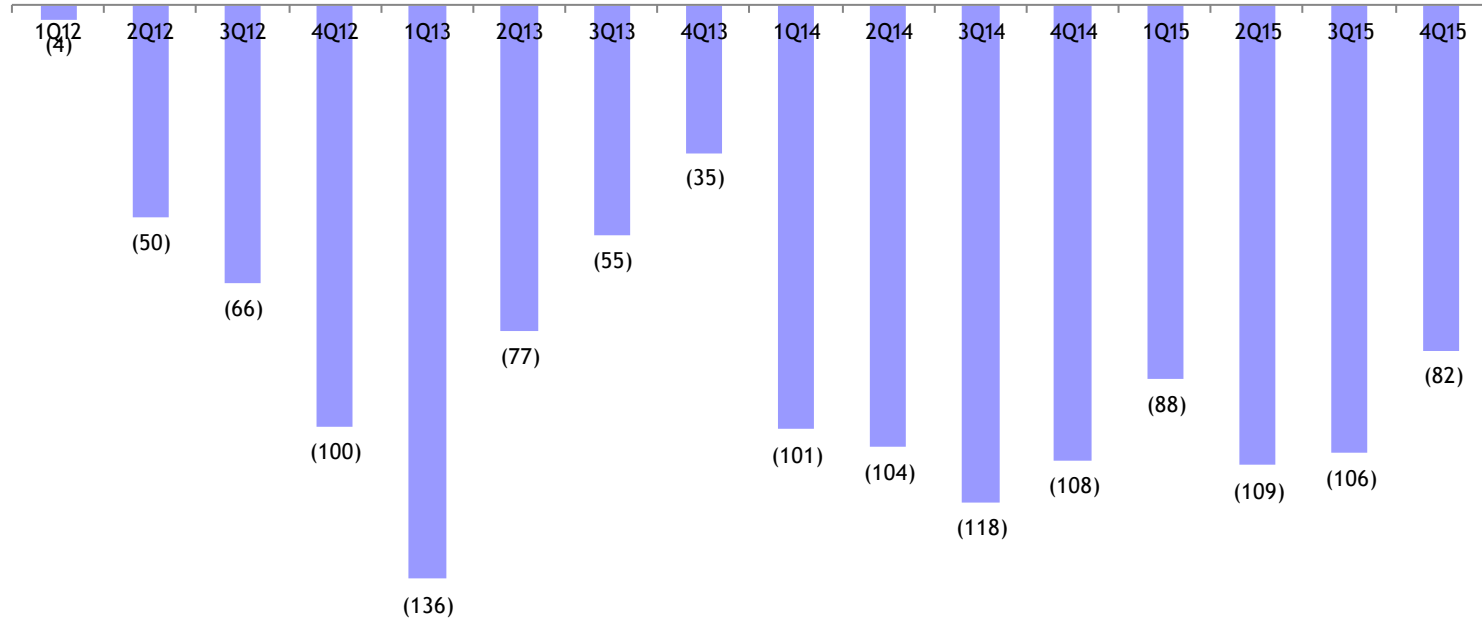


Includes: CMCSA, TWC, CHTR, and CVC.

Source: Company Data, NSR estimates.

Pay-TV Gross Margin Growth (bps y/y)

Gross margins were down 82bps y/y.



Includes: CMCSA, TWC, CHTR, and CVC.

Source: Company Data, NSR estimates.

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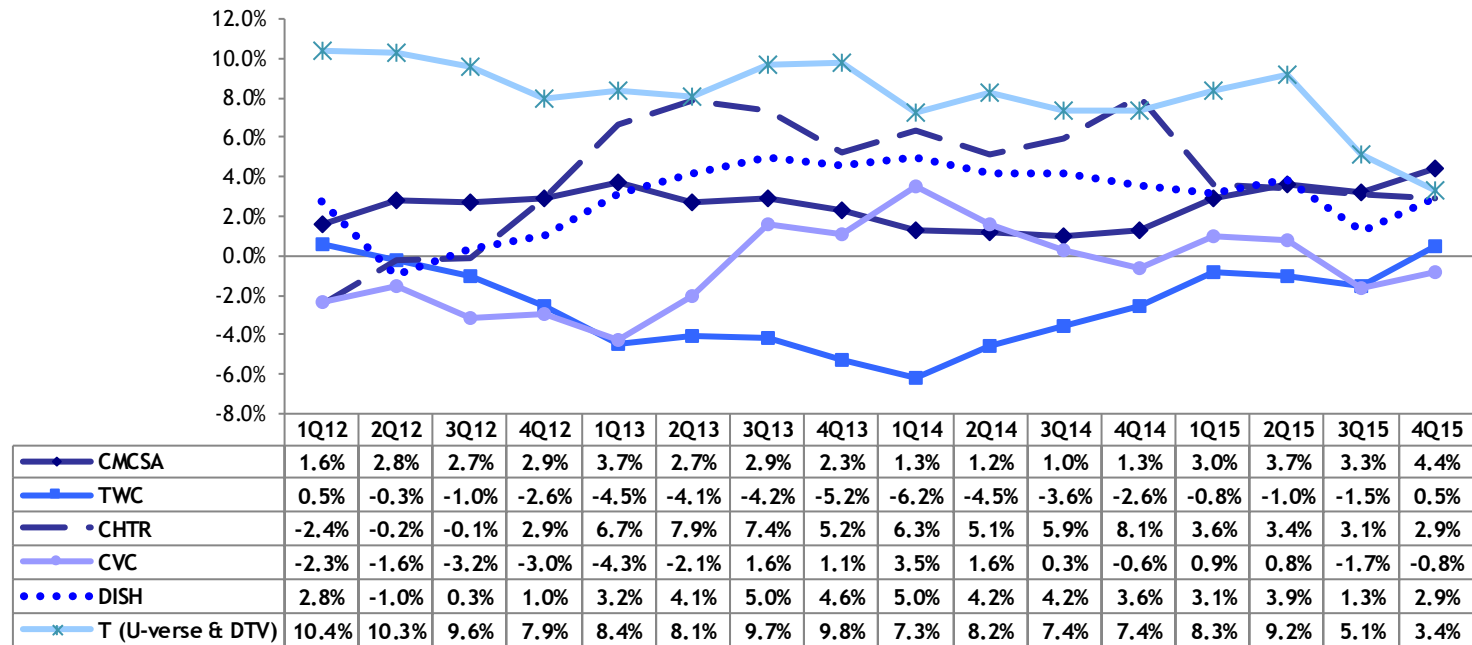
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Pay-TV Revenue Growth (y/y)

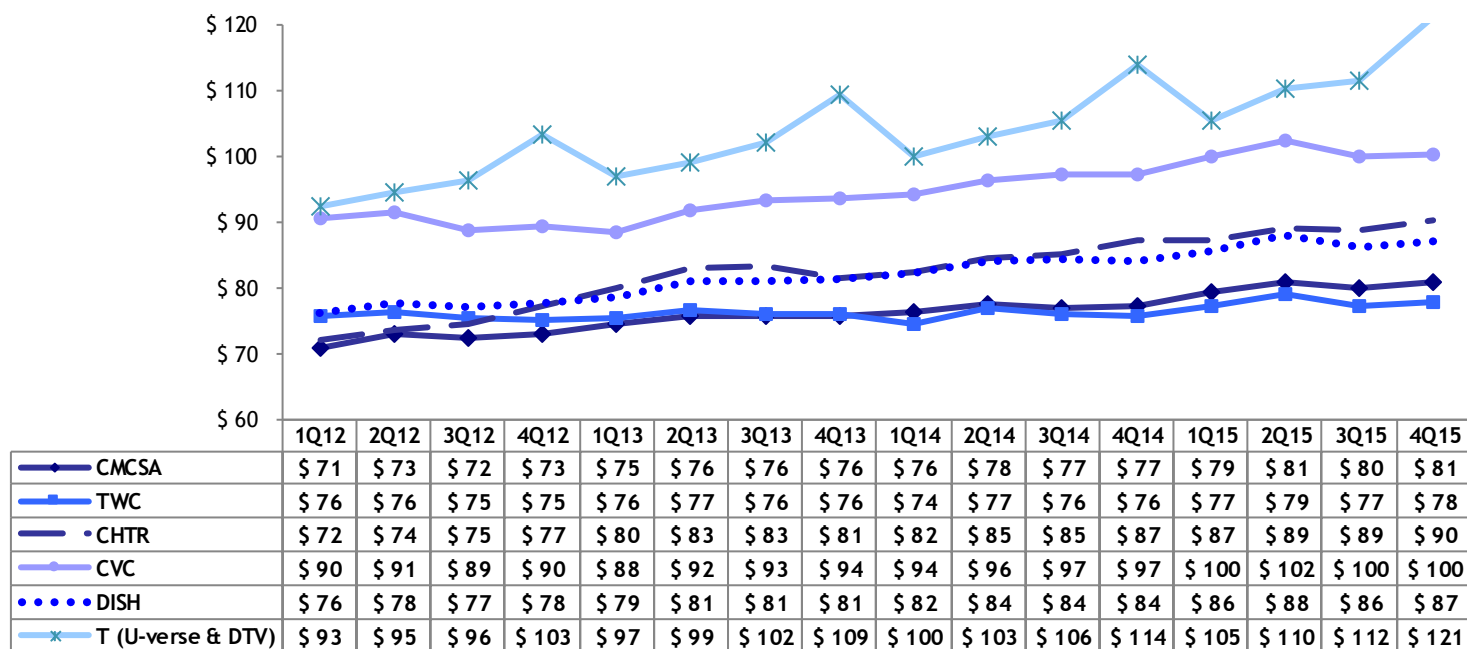
Pay-TV revenue growth held steady, as accelerations at CMCSA, TWC, CVC, and DISH were offset by decelerations at T/DTV and CHTR.



Source: Company Data, NSR estimates.

Pay-TV ARPU

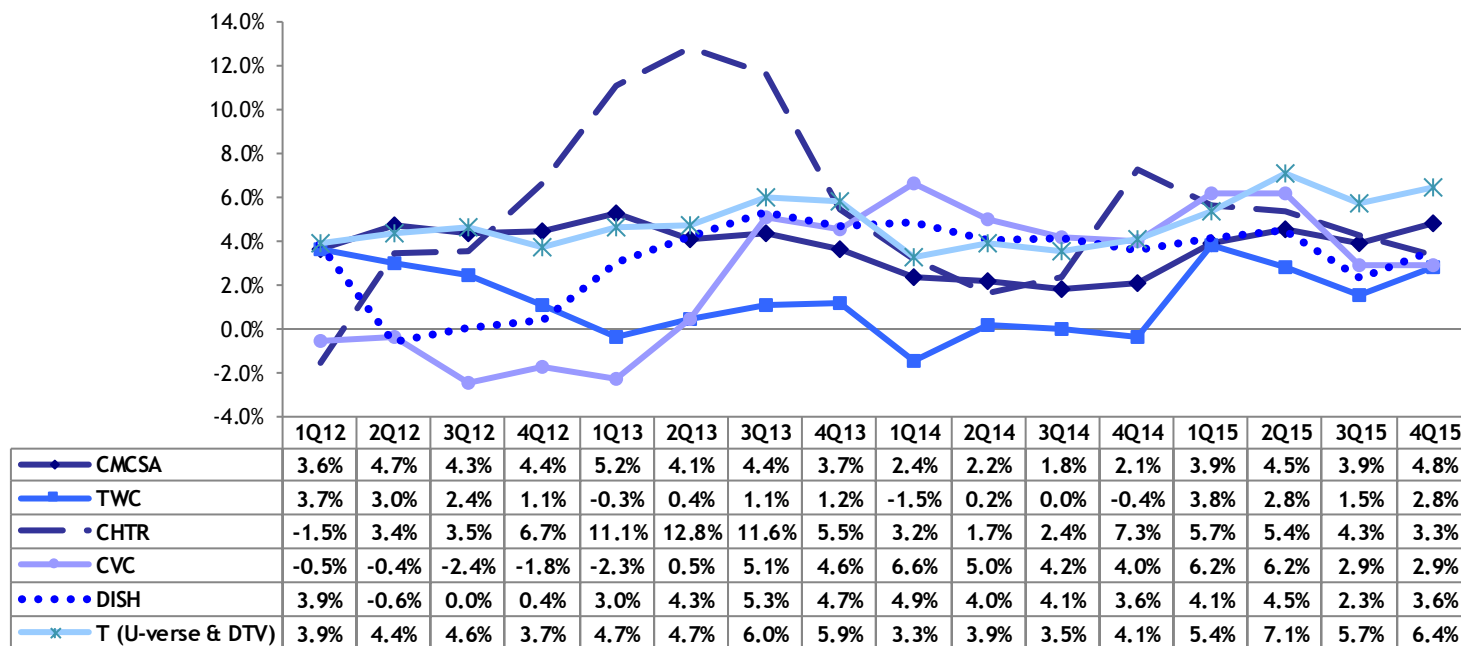
ARPU was flat-to-up across the operators. CVC continues to report the highest ARPU amongst the Cable companies, while DTV remains highest overall.



Source: Company Data, NSR estimates.

Pay-TV ARPU Growth (y/y)

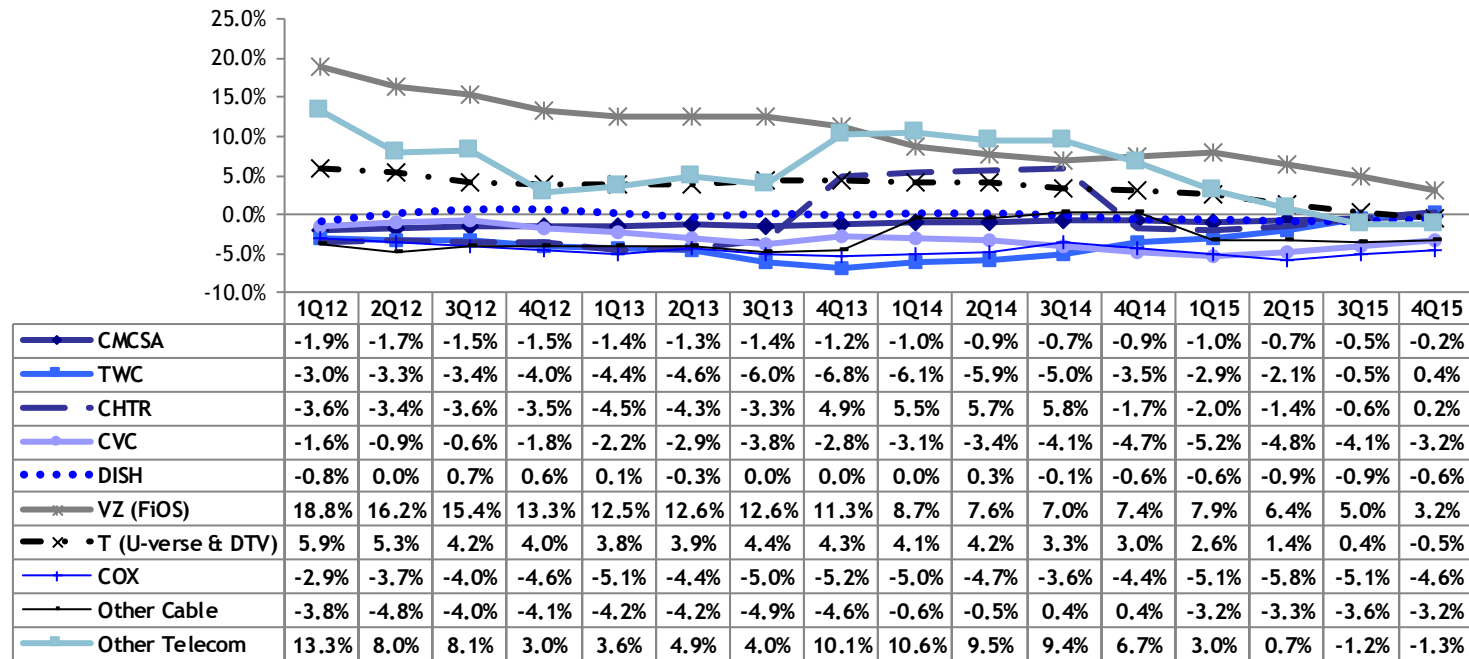
ARPU growth was positive for the industry and grew the fastest at Comcast and AT&T/DTV this quarter.



Source: Company Data, NSR estimates.

Pay-TV Subscriber Growth (y/y)

Pay-TV subscriber trends improved for Cable companies at the expense of Telcos.

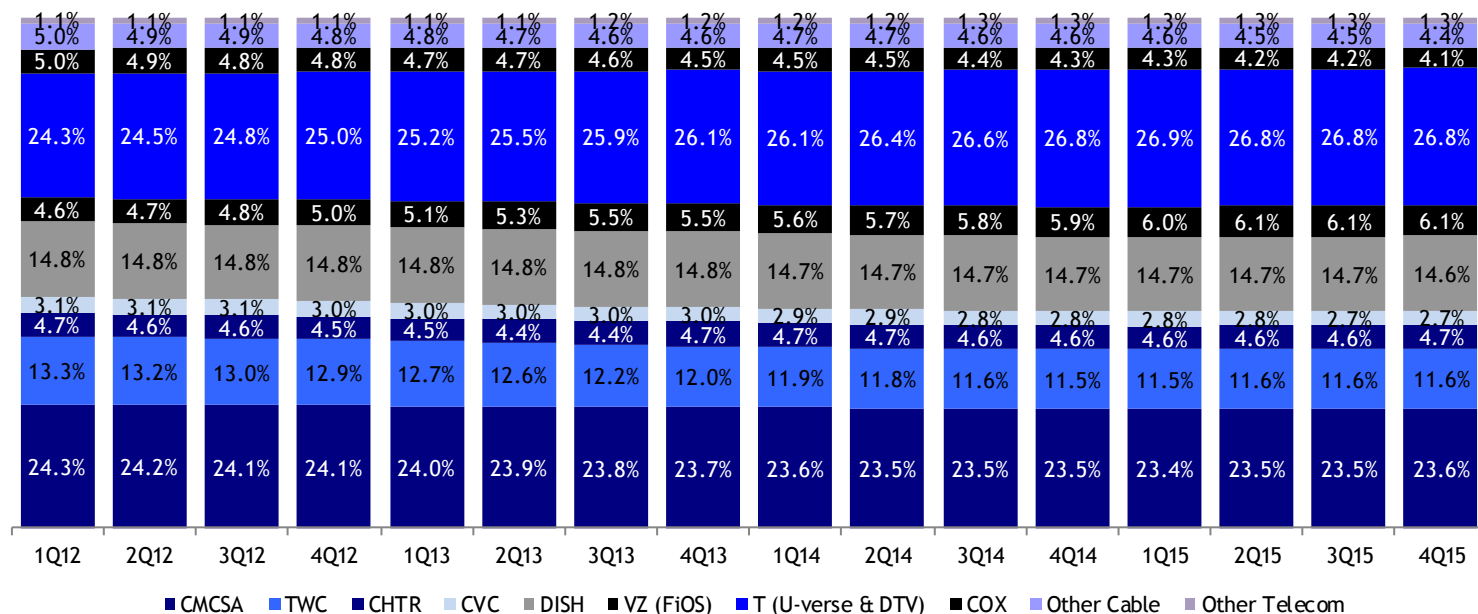


Other Cable includes: Bright House, Suddenlink, Mediacom, RCN; Other Telecom includes: Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

Pay-TV Subscriber Share

Shares of MVPDs remained relatively unchanged, with shifts less than ~10bps.

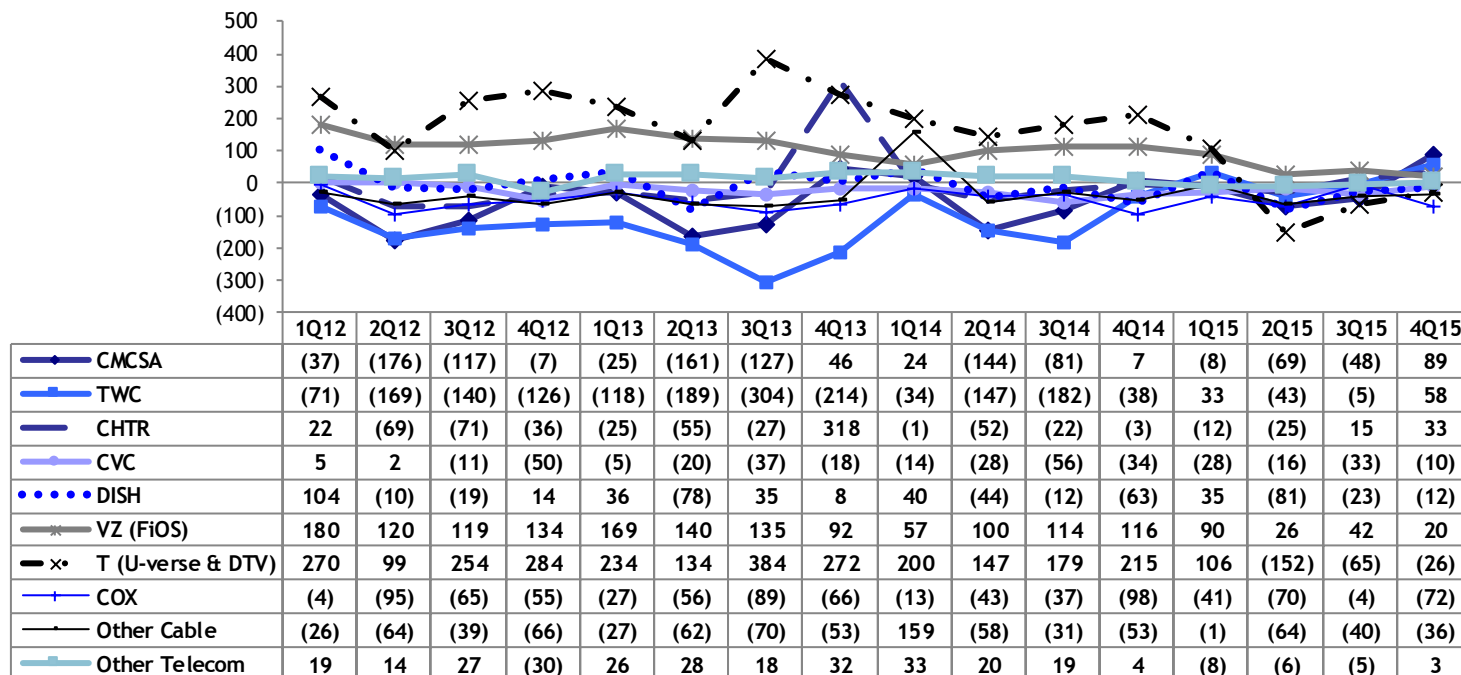


Other Cable includes: Bright House, Suddenlink, Mediacom, RCN; Other Telecom includes: Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

Pay-TV Net Adds

CMCSA, TWC, and CHTR accounted for the vast majority of Pay-TV net adds this quarter. Most other players in the industry lost subscribers.

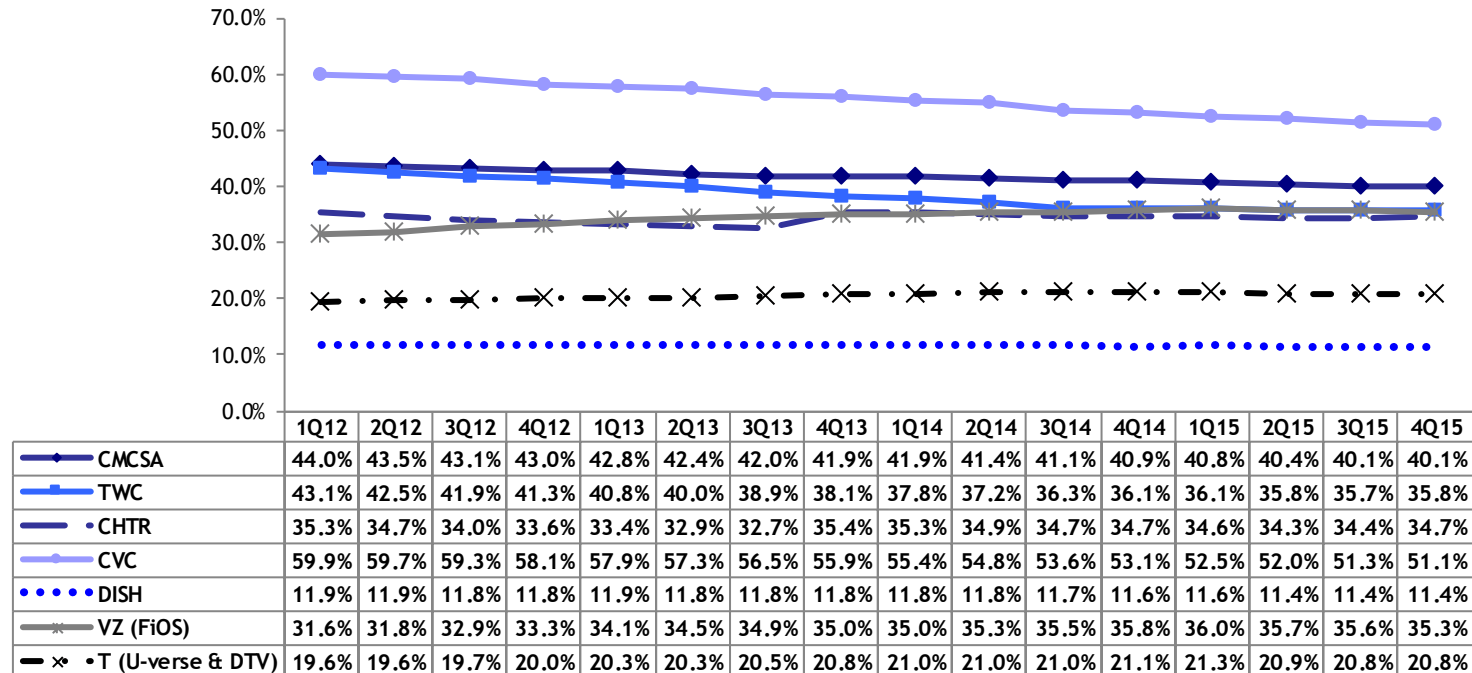


Other Cable includes: Bright House, Suddenlink, Mediacom, RCN; Other Telecom includes: Frontier, Windstream, and CenturyLink.

Source: Company Data, NSR estimates.

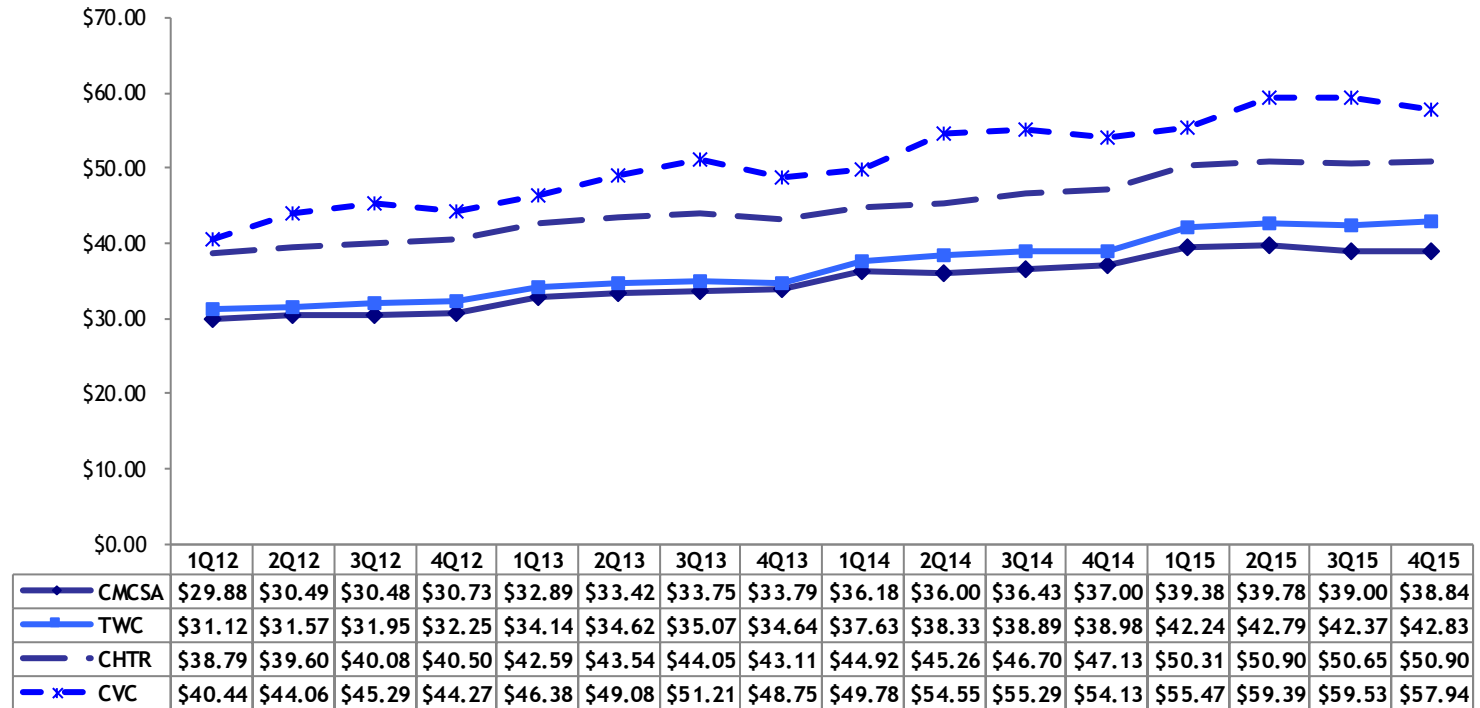
Penetration Of Homes Passed

CVC reports penetration of homes past that is 1100bps higher than CMCSA and 1600bps higher than VZ. We expect CVC to see penetration rates fall at a faster rate than the rest of the industry given their competitive overlap.



Source: Company Data, NSR estimates.

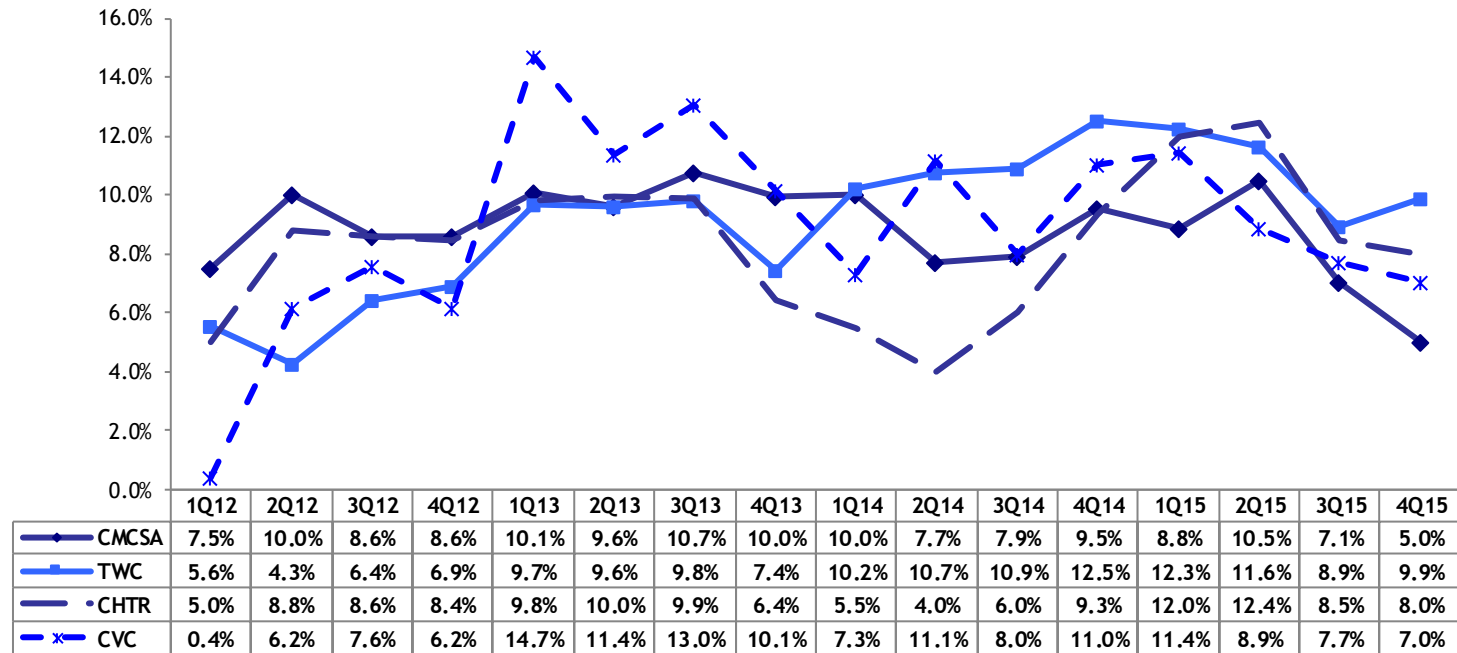
Programming Cost/Sub



Source: Company Data, NSR estimates.

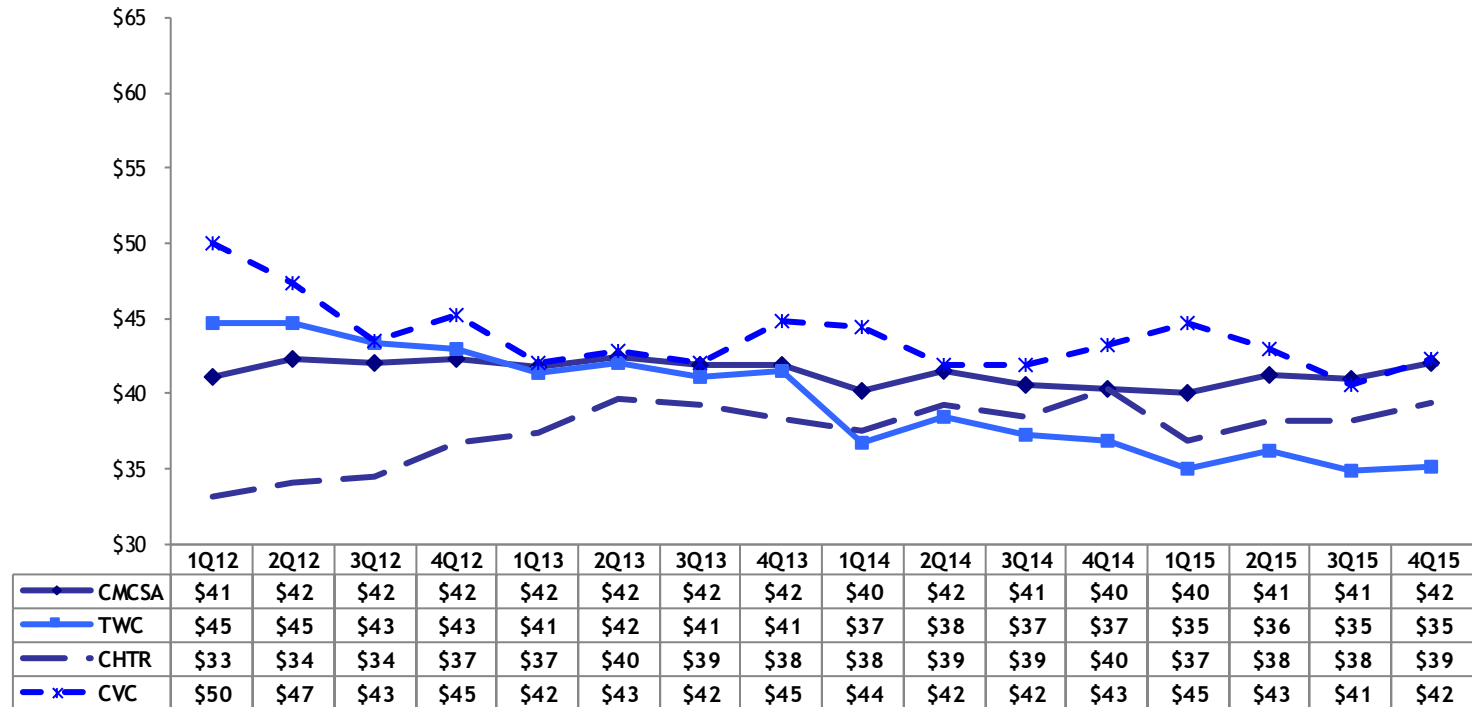
Programming Cost/Sub Growth (% y/y)

TWC and CHTR had the highest programming cost growth at 9.9% y/y and 8.0% y/y, respectively.



Source: Company Data, NSR estimates.

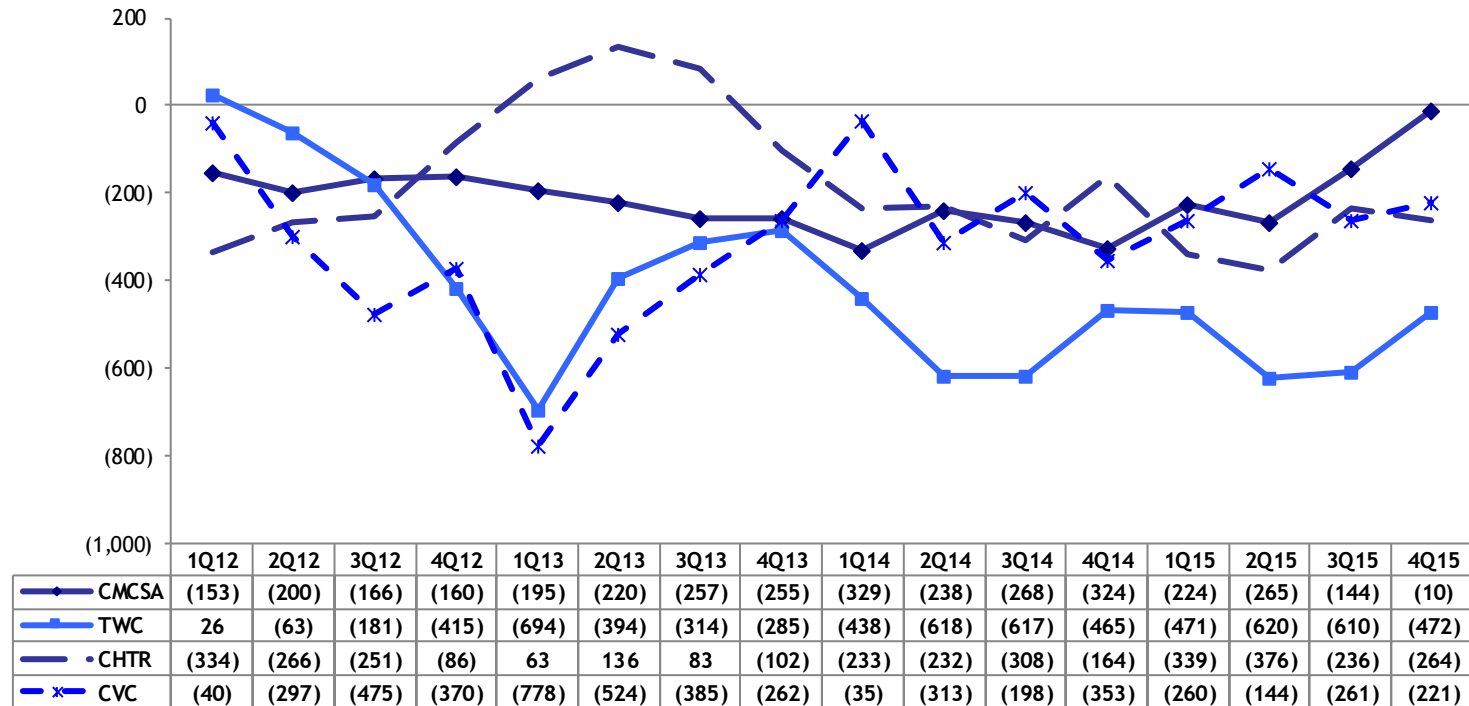
Pay-TV Gross Profit Per Sub



Source: Company Data, NSR estimates.

Pay-TV Gross Margin Growth (bps y/y)

Cable gross margins continued to decline, with TWC experiencing the largest decline of 472bps y/y.



Source: Company Data, NSR estimates.

Appendix

Disclosures

This report was produced by New Street Research LLP. 11 Austin Friars, London, EC2N 2HG Tel: +44 20 7375 9111

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