

Connect America Cost Model Virtual Workshop Questions and Comments Posted Between March 26, 2013 and April 29, 2013

Between March 26, 2013, and April 29, 2013, one party supplemented its prior submission on the following topic:

DETERMINING THE FRACTION OF SUPPORTED LOCATIONS THAT WILL RECEIVE SPEEDS OF 6 MBPS/1.5 MBPS OR GREATER

Background

The *USF/ICC Transformation Order* requires price cap carriers that accept the state-level commitment for universal service support under Connect America Phase II to offer broadband at speeds of 4 Mbps/1 Mbps to all supported locations and at least speeds of 6 Mbps/1.5 Mbps to a number of supported locations by the end of the fifth year. The Commission directed the Wireline Competition Bureau to design the forward-looking cost model so that it ensures that the “most locations possible” receive broadband at speed of 6 Mbps/1.5 Mbps or greater at the end of the five year term.

Question(s)

- 1) The ABC Coalition has argued that carriers that receive Connect America Phase II support will generally choose to build or maintain fiber-to-the-DSLAM networks rather than build new fiber-to-the-premises networks. How specifically should the Bureau determine what fraction of locations would reasonably be required to receive speeds of at least 6 Mbps/1.5 Mbps? Would it be appropriate to calculate the number of locations likely to receive speeds of 6 Mbps/1.5 Mbps when the network is engineered to deliver at least 4 Mbps/1 Mbps to the most distant supported locations? What assumptions should be made regarding the gauge of the copper and the maximum copper loop length?

Comments

- **Robert Mayer, on behalf of United States Telecom Association**

The following table did not attach to the previous submission which was entered in to Virtual Workshop in response to the following question:

- 1) The ABC Coalition has argued that carriers that receive Connect America Phase II support will generally choose to build or maintain fiber-to-the-DSLAM networks rather than build new fiber-to-the-premises networks. How specifically should the Bureau determine what fraction of locations would reasonably be required to receive speeds of at least 6 Mbps/1.5 Mbps? Would it be appropriate to calculate the number of locations likely to receive speeds of 6 Mbps/1.5 Mbps when the network is engineered to deliver at least 4 Mbps/1 Mbps to the most distant supported locations? What assumptions should be made regarding the gauge of the copper and the maximum copper loop length?

Response: Resubmitted with Accompanying Table

The Coalition affirms that carriers receiving Connect America Phase II support will generally choose to build or maintain fiber-to-the-DSLAM networks rather than build new fiber-to-the-node or fiber-to-the-premises networks. Based on the experience of Coalition members building fiber-to-the-DSLAM networks using a variety of vendors, the Coalition believes that locations having a maximum copper loop length of 4 Kft using 26-gauge copper pairs should reliably receive speeds of at least 6 Mbps/1.5 Mbps. However, costs beyond what is currently included in CACM, such as costs associated with pair bonding, may be necessary to achieve these higher speeds. In the context of CQBAT, CostQuest had provided a scenario

for the Coalition with the number of locations by copper loop lengths grouped in 1 Kft increments for funded CBs. The attached table illustrates the information provided by this report. While this capability may not be built into the current release of CACM, the Coalition's experience is that CostQuest should be able to develop a similar report for CACM. The Coalition believes that this report using the adopted inputs in CACM provides an adequate framework for the Bureau to determine the fraction of locations that can reasonably be expected to receive speeds of at least 6 Mbps/1.5 Mbps by the end of the fifth year of CAF2 funding.

Copper Length (Kft)	Serviced Locations	% of Srvd Loc by Length
1	14,092	0.3%
2	32,615	0.8%
3	56,672	1.4%
4	93,489	2.2%
5	135,952	3.3%
6	184,022	4.4%
7	244,758	5.9%
8	314,077	7.6%
9	383,337	9.2%
10	476,662	11.5%
11	643,646	15.5%
12	1,530,718	36.8%
13	47,314	1.1%
Total	4,157,354	100%

Between March 26, 2013, and April 29, 2013, the Wireline Competition Bureau posted the following new topics in the Connect America Cost Model Virtual Workshop:

RATE OF RETURN FOR CONNECT AMERICA COST MODEL

Background

The Commission previously adopted a unitary rate of return for all incumbent LECs – regardless of size – when such carriers were operating as regulated monopolies. Since that time, Congress enacted the 1996 Act, technology changes have introduced alternatives to the incumbent’s service, and most of the larger incumbent LECs have moved to price cap regulation.

Hybrid Cost Proxy Model: The authorized federal rate of return has been 11.25 percent since January 1, 1991. HCPM utilizes the authorized rate of return. When establishing criteria to ensure consistency in the calculations of federal universal service support, the Commission concluded that the authorized federal rate of return on interstate services would be a “reasonable rate of return by which to determine forward looking costs.”

Connect America Cost Model: The Connect America Cost Model (CACM) utilizes Annual Charge Factors (ACFs) to capture the annual cost of capital investments that are used over time, including the cost of initial deployment, replacement capital expense, and the cost of money necessary to have access to that amount of capital. The ABC Coalition previously submitted into the record a model that assumed a nine percent rate of return when calculating ACFs. In response to the *June 2012 Model Design Public Notice*, the American Cable Association submitted data about a number of price cap carriers, arguing that an appropriate rate of return for the price cap companies receiving model-based support should be lower than nine percent. The current version of the model assumes a nine percent rate of return in setting the ACFs. The model also assumes a debt-to-equity ratio of 25:75 to calculate taxes only on equity.

Question(s)

- 1) In order to adopt final values for ACFs, the Bureau will need to make an assumption about the cost of money for price cap carriers receiving model-based support. What rate of return should the Bureau use in setting the ACFs when it adopts the final version of the model? Would it be appropriate for the final version of CACM to have different cost of money assumptions for different price cap carriers? Or, would the administrative benefits of using a single rate of return for all price cap carriers outweigh the complexity of establishing carrier-specific assumptions regarding appropriate rates of return?
- 2) Given the different regulatory treatment of price cap carriers, particularly for purposes of calculating universal service support, should the Commission use a different rate of return for purposes of calculating universal service support in the CACM for price cap carriers than the generally-authorized rate of return for incumbent rate-of-return carriers?

Comments

- **Puerto Rico Telephone Company**

PRT Answer to Question 1

PRTC believes that at a minimum the weighted average cost of capital (WACC) or rate of return used in the CACM should remain at an after-tax level of 11.25% - the current authorized federal rate of return and the level used in the HCPM. Market conditions have evolved since the HCPM was adopted to determine FUSF for non-rural carriers, including the price cap carriers, such that carrier revenue streams are far less certain and, therefore, much more risky. An increase in business risk for one section of the economy relative to others means that the investors will require higher expected returns in the sector where risk has increased.

A requirement for higher returns will also follow smaller price cap carriers, such as PRTC, relative to its larger competitors because smaller carriers will have a reduced ability to mitigate revenue losses.[1] As a result, the cost of money used in the CACM should not be constant across all price cap carriers. The inclusion of variable rates of return for different price cap carriers should not be administratively burdensome as the model already includes multiple inputs that have values that vary by company size and/or location.

To be clear, PRTC does not believe that the current capital cost values used in the CACM are representative of the actual cost to the Company of attracting and maintaining capital balances. PRTC faces strong competition in its service area from wireless and cable TV companies in the Commonwealth. This, coupled with declining access lines and revenues, clearly indicates that PRTC faces substantially greater business risk than it even has in the past with the federally authorized return being set at an after-tax level of 11.25%. This increased risk will not be reflected in the capital cost factors used in model if a 9.7% cost of equity and a 9% cost of money are used in the model.

The Bureau states in the Rate of Return section of the virtual workshop that the 9% cost of money used in the CACM is consistent with a proposal of the ABC coalition and higher than warranted based on an argument made by the American Cable Association. It is hard to accept that a pre-competitive era authorized rate of return of 11.25% should be reduced by 225 basis points in a time when traditional revenue streams such as toll, access and even basic wireline are disappearing and intermodal competition is the norm. Further, the risk faced by PRTC cannot be considered equal to that faced by the much larger price cap carriers such as AT&T and Verizon. These carriers are magnitudes larger than PRTC and are market leaders in video and wireless services while PRTC is still heavily dependent upon traditional telco revenue streams. Even PRTC's parent, American Movil, does not compare to its American counterparts in terms of financial strength.[2]

PRTC believes that the Commission's preliminary determination that current market conditions indicate that the authorized return should be no greater than 9% ignores the actual market conditions faced by PRTC and focuses only on the reduction in the cost of U.S. Treasury debt and ignores the ever increasing risks small LECs face. Although the yield on 10-year U.S. Treasuries has fallen since last prescription, that does not necessarily mean that the WACC has declined and certainly not by a similar amount. Before any determination can be made, it is necessary to determine the validity of any estimates of not just the cost of debt as proxied by treasury yields but also the other determinants of a firm's cost of capital – the cost of equity and the debt ratio. Although cost of equity and corporate debt tend to be correlated with Treasury yields over time, there are a number of reasons that this may not be the case.

Furthermore, there have been significant changes in the regulatory environment, the current proceeding being just one of many that also increase the uncertainty that PRTC faces. As PRTC has consistently demonstrated, the CACM predicts that PRTC's federal support will drop almost 95%. These factors will almost certainly increase the risk and therefore capital cost.

There have also been significant changes in the financial markets in general. The Federal Reserve has taken unprecedented actions in an attempt to stabilize financial markets in response to the financial crises beginning in 2007 and some of these have continued in an effort to bring down the unemployment rate. Most notably, the Federal Open Market Committee has purchased large quantities of long-term Treasury Bonds in an attempt to reduce interest rates and support the economy and job creation. The Federal Reserve actions of keeping interest rates at lower levels than would otherwise prevail will impact the historical relationship between the Treasuries yields and the cost of a LEC's equity and corporate debt as it severs the ties between treasury yields and corporate risk. With these ties severed it becomes impossible to determine the estimate changes in the WACC simply by observing changes to Treasury yields.

Given the current market conditions and the uncertainties created by changes in regulatory treatment, it should be clear that the risks faced by an insular carrier such as PRTC are such that a reduction in the cost of money value used in determining USF support is not justified at this time.

FN 1 - Financial methods used to determine cost of capital often include "size premiums" that reflect the investor requirements for higher expected returns for smaller firms. Based on the most recent edition of the Ibbotson S&P 500 Valuation Yearbook, the difference in the cost of equity for a firm the size of

Verizon or AT&T to one such as PRTC would be 283 basis points or 2.83%. This assumes a market capitalization for Verizon and AT&T that exceeds \$17.5 billion but is less than \$626 billion and for PRTC of between \$514 million to \$818 million.

FN 2 - The most recent Value Line reports for American Movil, AT&T and Verizon show that American Movil's financial strength rating is B++ compared to AT&T and Verizon's A++ rating, while American Movil's pricing stability rating is 30 percent less than that of the others. Most importantly from a risk perspective, its Earnings Predictability rating is again 20 -30 percent lower that of AT&T and Verizon.

PRT Answer to Question 2

PRTC believes that the purpose of the rate of return variable in the CACM and a rate base calculation formula is the same and therefore the value should be the same, subject to any necessary adjustment for size and risk differences.

- **Robert Mayer, on behalf of United States Telecom Association**

The cost of money or rate of return is one of the more significant individual inputs to the CACM. At present, CACM runs have utilized an aggregate unitary rate of return of 9.0% comprised of a 9.7% cost of equity and 7.0% cost of debt, weighted 75% equity, 25% debt. The Bureau has invited comments on what rate of return should be used in setting annual cost factors in the final version of CACM.

Price Cap Carrier Analysis

To the degree that the Bureau desires additional support for the cost of money to be used in CACM, the Coalition views a relevant analysis can be made based on examining financial data for the publicly traded price cap carriers included in CACM. The Coalition supports the use of a collective unitary result and is developing such an analysis. We anticipate presenting the results of our analysis soon.

At a high level, only four items are needed to determine the company-specific cost of money for a publicly traded firm. Those are the value of its equity, the cost of that equity, the amount of its debt, and the cost of debt. Value of equity can be observed in the market. The amount and cost of debt can be observed from the company's books of account. Cost of equity is a more theoretical exercise for which many estimation tools exist. Typically, more than one modeling approach is used in order to understand the range of outcomes for the cost of equity that can be observed.

Two of the most common approaches to estimating the cost of equity are the Capital Asset Pricing Model (CAPM) and the Dividend Discount Model (DDM). Every capital cost model can be implemented with variations in method and inputs, each with varying degrees of acceptance or controversy. Very brief descriptions of CAPM and the single-stage DDM follow.

CAPM begins with a risk free rate[1] and adds to it a company-specific systematic risk[2] plus a size premium which is reflective of a company's relative market risk based on market capitalization. An average equity today under CAPM would be seen to have a minimum cost of approximately 9.5% made up of the current risk free rate of approximately 2.8%[3] plus an expected market ERP of 6.7%.[4] Except for very large companies, size premia are greater than zero.[5]

In one of its simplest forms the single-stage DDM sums the forward dividend yield[6] and expected growth estimates. Expected growth estimates often come from a consensus of analyst opinions. As a simple example, AT&T's forward dividend divided by its average stock price over the last 6 months is 5.18% and AT&T's expected average growth over the next 5 years according to the consensus estimate of 25 analysts is 5.50%.[7] suggesting a cost of equity of 10.68%.

Cost of Money Recommendations

While our analysis is in the preliminary stages, we fully expect that it will support the current CACM overall cost of money. No single company will exactly reflect the composite average cost of money. Companies capital structures (the percent of debt and equity) vary significantly. The costs of equity and debt vary based on investor and lender confidence. Yet we expect the computed estimates of the weighted resulting cost of money by company will fall within a relatively narrow range. Thus, we

recommend that the Commission adopt a unitary cost of money of 9.0% based on the capital structure currently utilized in CACM.

The Bureau also asked whether the rate of return for purposes of calculating universal service support should be the same or different between price cap carriers and rate-of-return carriers. We recommend that the authorized rate of return be the same for both types of carriers. Many rate-of-return carriers are privately held and an analysis of their cost of capital would rely heavily on comparable company analysis of the sort we are developing. While it may be argued that individual companies experience higher risk (and thus could have higher cost of equity) because of their very small size, such claims fail to acknowledge the substantial safety net afforded companies that are either members of a holding company arrangement (e.g., numerous TDS affiliates) and/or are members of NECA. While the companies necessarily obtain their own debt financing, their interstate investments and revenues have been pooled in what is effectively a multi-billion dollar conglomerate.[8] We also note that one state commission has imposed a 9.00% intrastate ceiling on cost of money for its equivalent of a universal service fund.[9]

Responses to the American Cable Association

On the Virtual Workshop links related to the rate of return, the Bureau included links to various documents, including Reply Comments in WC Docket No. 10-90 filed by the American Cable Association (ACA) on July 23, 2012. Those comments were supplemented by March 7, 2013 Ex Parte comments filed by the ACA.

The Tax Shield

ACA suggests in its recent Ex Parte that the present 9.0% cost of capital inputs to CACM are overstated because they do not recognize that interest may be deducted when determining income tax liability. This so-called tax shield would, according to ACA reduce the effective cost of money to 8.34%.

What ACA's comments do not acknowledge or recognize is that CACM does in fact recognize the tax shield in the mechanism by which CACM computes total cost of money including return and taxes. CACM treats the separate components of cost of money individually and provides a tax gross-up on only the return on equity portion of the 9.0% cost of capital. Thus, the total return and tax revenue requirement is return on equity, interest cost and taxes only on the return on equity portion.

Overall Cost of Capital

ACA goes on to criticize the 9.0% level of cost of capital in CACM, suggesting that a correct value should be in the range of 5.60% to 6.51%, including the tax shield effect. ACA premises this claim on what appears to be a CAPM-like assessment of only 5 price cap carriers, a 2% risk free rate for 10-year Treasury bond rates, an 8% ERP, a combined Federal and State marginal tax rate of 39.3%, a "telecom utilities" unlevered beta of 0.51 utilized with unspecified company-specific debt and equity ratios.

ACA's assumption set errs in key ways. We have already discussed the tax shield argument. The use of 10-year treasuries to identify the risk free rate is inappropriate because it does not match average asset lives. This error is somewhat counteracted by the use of an 8.00% ERP which is higher than the ERP used in our analysis.[10] The telecom utilities "industry" as defined by the underlying Value Line information does not include AT&T, Verizon or, Fairpoint, which are in the Telecom Services industry according to Value Line. The Telecom Utilities unlevered beta used by ACA is 0.51. The Telecom Services unlevered beta is 0.91. Thus, by understating the applicable industry unlevered beta for the two largest companies, ACA has significantly understated its derived cost of capital. Separately from this criticism, we note that an "industry" average unlevered beta approach as used by ACA is unnecessary because the actual levered beta for each company is derivable from market data.

On the question of utilizing a single cost of money assumption or separate results for each company, ACA appears to agree that for administrative simplicity, significant administrative complexity would be avoided by utilizing a single cost of money.

Future Net Salvage Value

ACA suggests in its March 7 Ex Parte: "If an asset is expected to have zero value at the end of its economic life, its future net salvage should be zero." ACA is simply wrong. While an asset may have zero

economic value at the end of its life – it clearly may have negative economic value as cost of removal may significantly exceed salvage proceeds, if any. As the Commission well knows, it has historically adopted depreciation lives inclusive of net salvage values.[11]

Accelerated Depreciation

ACA suggests in its March 7 Ex Parte that the way CACM handles equal life group depreciation may overstate costs. We believe ACA's concerns are misplaced.

Use of Gompertz-Makeham Curves

ACA complains that the reasonableness of the use of Gompertz-Makeham curves cannot be determined at this time. In response we would simply point ACA to the Inputs Order identified by the Bureau in its 3v3 cost of capital virtual workshop page. Therein, the Commission not only discussed the derivation and long-term use of these curves, but also displayed curve coefficients associated with specific accounts in an appendix to the decision.

[1] 20-year treasuries are often used to approximately match overall asset lives and to mesh with how Equity Risk Premia are developed by Morningstar.

[2] Company-specific systematic risk is derived by multiplying the market-wide equity risk premium (ERP) by a company-specific measure (beta) of the degree to which the stock of the company reflects the average riskiness of the market. An equity with a market-level of risk would have a beta of 1.0.

[3] <http://www.ustreas.gov/offices...>

[4] Morningstar® Ibboston® 2013 SBBI Valuation Essentials

[5] Id.

[6] Developed from the anticipated dividends in upcoming year divided by the stock price.

[7] Yahoo Finance/Thompson

[8] Additionally, hundreds of millions of dollars of intrastate revenue requirements are supported by the federal universal service fund mechanism.

[9] See Georgia PSC Tenth Amendatory Order in Docket 17142 dated December 5, 2008. Therein the commission set the allowed return on equity at 10.625% and capped the overall rate of return at 9.00%. Companies relying on relatively high amounts of low cost debt may rates of return lower than 9.00%.

[10] It is not clear whether the 8% ERP was developed in relation to the 2% risk free rate whereas the Morningstar ERP is derived using 20-year treasury yields.

[11] Federal-State Joint Board on Universal Service, Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC Docket Nos. 96-45, 97-160, Tenth Report and Order, 14 FCC Rcd 20156, 20348, para. 431 (1999) (Inputs Order).

OPERATING EXPENSES INPUT VALUES

Background

The Connect America Cost Model (CACM) calculates monthly operating expenses (opex) generally as a dollar amount representing a percentage of capital investment or a percentage of assumed average revenue per user (ARPU). Here we describe in more detail the methodology used to develop opex values and seek comment on whether any adjustments should be made to the specific input values currently contained in CACM version 3.0.

Parties who have signed the Third Supplemental Protective Order may view the CACM version 3.0 opex input values, along with a more detailed description of how the inputs were calculated and supporting spreadsheets, by accessing the model, visiting the Resources page, and opening the Opex Overview file.

CACM uses publicly-available data where possible for opex input values, supplemented by other sources where there is no readily-available public source of information for opex, to develop baseline opex amounts per month per subscriber line, by company size. Opex input values vary depending on classification of the company size at the holding company level as described in the OCNCoSize input table.

Opex values also vary depending on the classification of the density of the study area as “urban,” “suburban,” and “rural.” The classifications are based on NECA’s classification of the study area code. Because NECA does not utilize a suburban classification, CACM uses the same inputs for suburban densities as those used for urban densities.

To calculate the Network Operations Expense input values:

- CACM primarily utilizes network operating cost data from National Exchange Carrier Association (NECA) data (pulled from “Universal Service Fund Data: NECA Study Results”) from 2008 to 2010; ratios of opex to capex were derived to create a large company baseline for each category of expense and the results were validated against company-specific data provided by ABC Coalition Company members.
- The network opex factors were then adjusted to reflect a forward-looking network topology by applying a ratio of modeled capex to booked capex (based on ARMIS and NECA data).
- Once model output was available, the scaling was revisited to ensure that forward-looking opex values did not exceed NECA-based booked opex.
- Using knowledge of industry costs, the cable factors in the Network Opex were further segregated between metallic and non-metallic to account for the operating cost differences between the two types of cable.
- Finally, the opex factors were applied to the capex estimates in the model to determine monthly opex input values for network operations expense.

To develop CACM General and Administrative (G&A) input values, a regression of five years (2006 - 2010) of NECA G&A Opex (dependent variable) and Total Plant in Service (TPIS) (independent variable) data segregated by company size was performed to determine the relationship between total plant investment and G&A operating expenses, with a forward-looking to historical G&A adjustment factor applied by company size and by density; again, the results were validated against company-specific data provided by ABC Coalition Company members.

CACM Customer Operations and Marketing input values were developed using Automated Reporting Management Information System (ARMIS) data for large and mid-sized incumbent local exchange carriers (pulled from “FCC Report 43-01, ARMIS Annual Summary Report”). ARMIS data are not available for all carriers and have been discontinued over time for others. (For example, starting with the 2008 reporting year, Verizon, AT&T, and Qwest were no longer required to file FCC Report 43-01.) 2007 and 2010 ARMIS data were used to determine the ratio of customer operations and marketing expense to revenue and validated against 2010 company-specific data provided by ABC Coalition Company

members; CACM then applies those resulting percentages to an assumed ARPU to develop a per line dollar amount input value. The use of the most recently available historical data is consistent with the approach taken by the Commission in developing input values for the Hybrid Cost Proxy Model.

CACM calculates bad debt input values by assuming an industry-standard of 2 percent of ARPU.

The overwhelming majority of data supplied to NECA and ARMIS are for networks with a twisted-pair-copper last mile. For comparison purposes, we provide below the per-subscriber network operating input values from version 3.0 of CACM for FTTd and indicate how those input values compare to NECA and ARMIS data for opex. Note that ARMIS data include operating expenses for providing all services, including special access and private line services, which are excluded from cost reporting in the CACM; one therefore would expect the CACM estimates to be lower than the ARMIS data. We then provide a comparison between CACM version 3.0 FTTd and fiber-to-the-premises (FTTP) network operating costs per subscriber per month; one would expect the FTTP opex input values to be lower. Finally, we provide a per subscriber summary of the non-network operating costs for both FTTd and FTTP; the G&A values are lower for FTTP than FTTd.

Per-subscriber costs vary depending on assumptions regarding likely take rate: network opex, calculated as a weight on the capital investment, remains largely constant regardless of take rate, so that the per-subscriber cost will be higher if one assumes fewer subscribers. To illustrate how opex input values will vary depending on assumed take rate, we provide below various CACM version 3.0 input values at differing take rates – specifically, at a 90 percent and 80 percent take rate.

CACM v3.0 FTTd network opex per subscriber per month (\$) compared to NECA network opex per line per month by company-size category

	Large	Medium	Small	X-Small	XX-Small
CACM FTTd network opex per sub (90%)	\$10.69	\$10.04	\$28.39	\$35.24	\$45.18
CACM FTTd network opex per sub (80%)	\$11.85	\$11.15	\$31.77	\$39.48	\$50.62
NECA network opex per sub	\$13.24	\$14.14	\$27.79	\$39.39	\$51.63

CACM v3.0 FTTd network opex per subscriber per month (\$) compared to ARMIS 43-01 data

	Large	Medium	Small	X-Small	XX-Small
CACM FTTd network opex per sub (90%)	\$10.69	\$10.04	\$28.39	\$35.24	\$45.18
CACM FTTd network	\$11.85	\$11.15	\$31.77	\$39.48	\$50.62

opex per sub (80%)					
ARMIS network opex per sub	\$21.36	\$21.36	NA	NA	NA

Comparison between CACM v3.0 FTTP and FTTd network opex per subscriber per month

	Large	Medium	Small	X-Small	XX-Small
CACM FTTP network opex per sub (90%)	\$6.16	\$6.72	\$19.61	\$23.84	\$31.47
CACM FTTd network opex per sub (90%)	\$10.69	\$10.04	\$28.39	\$35.24	\$45.18
Ratio (FTTP/FTTD)	58%	67%	69%	68%	70%
CACM FTTP network opex per sub (80%)	\$6.62	\$7.30	\$21.75	\$26.54	\$35.01
CACM FTTd network opex per sub (80%)	\$11.85	\$11.15	\$31.77	\$39.48	\$50.62
Ratio (FTTP/FTTD)	56%	65%	68%	67%	69%

Per Subscriber summary of G&A, Customer Operations, Sales, and Marketing, and Bad Debt operational costs in CACM V3.0

		Large	Medium	Small	x-Small	xx-Small
FTTd, 90%	CustomerOperationsMktOpex	\$5.93	\$5.93	\$5.51	\$7.35	\$9.95

take	GenAdminOpex	\$4.00	\$6.02	\$13.44	\$28.17	\$45.82
	BadDebtOpex	\$0.92	\$0.92	\$0.92	\$0.92	\$0.92
	Total	\$10.85	\$12.87	\$19.88	\$36.44	\$56.69
FTTd, 80% take	CustomerOperationsMktOpex	\$5.93	\$5.93	\$5.51	\$7.35	\$9.95
	GenAdminOpex	\$4.41	\$6.68	\$15.04	\$31.56	\$51.36
	BadDebtOpex	\$0.92	\$0.92	\$0.92	\$0.92	\$0.92
	Total	\$11.26	\$13.53	\$21.47	\$39.84	\$62.23
FTTp, 90% take	CustomerOperationsMktOpex	\$5.93	\$5.93	\$5.50	\$7.35	\$9.95
	GenAdminOpex	\$3.93	\$5.91	\$13.02	\$27.49	\$44.82
	BadDebtOpex	\$0.92	\$0.92	\$0.92	\$0.92	\$0.92
	Total	\$10.78	\$12.76	\$19.44	\$35.77	\$55.69
FTTp, 80% take	CustomerOperationsMktOpex	\$5.93	\$5.93	\$5.50	\$7.35	\$9.95
	GenAdminOpex	\$4.25	\$6.47	\$14.48	\$30.67	\$50.05
	BadDebtOpex	\$0.92	\$0.92	\$0.92	\$0.92	\$0.92
	Total	\$11.10	\$13.32	\$20.90	\$38.95	\$60.92

Question(s)

- 1) Is it appropriate to assume that 80 percent of locations will subscribe over the five-year time horizon as we determine the appropriate input values for opex? (This assumes 60-70 percent of locations subscribing at any one point in time, with some churn over time.) If the Bureau ultimately adopts a take rate different from 80 percent, should it scale the opex inputs to maintain a constant opex per subscriber, or allow opex per subscriber to change as seen in the tables above?
- 2) Although few carriers are deploying FTTP networks widely, available data indicate that network operating expenses for FTTP networks are substantially lower than those for copper-based networks. As shown in the charts presented above, the network opex input values in CACM version 3.0 for FTTP are 1/3 to 1/2 less than the input values for FTTd. Is that cost differential appropriate?
- 3) CACM version 3.0 currently uses a \$46 ARPU (for broadband only) in developing the bad debt and customer operations and marketing input values. The National Broadband Plan model estimated the ARPU of fixed voice service at approximately \$33.50 and the ARPU of fixed broadband at \$36-44. The total of the two services together would be roughly \$70-80. We note that customers that subscribe to both services may get a discount, while others may subscribe to only one service. Given this, is it reasonable to assume a \$65 ARPU when developing bad debt and customer operations and marketing input values? Are the values for bad debt of \$1.30 per subscriber per month, and \$8.43 for customer operations and marketing appropriate, instead of the input values shown in the table above?
- 4) CACM generally develops input values based on data for the large companies, and then applies factors to scale those inputs for companies of a smaller size. In an ex parte, ACA has argued that G&A costs are likely overstated because they are linearly related to capital expenses. It contends that the cost model fails to reflect that price cap carriers generally have operating leverage for G&A costs, and that incremental G&A expenses should go down as revenues increase. The charts above illustrate that the G&A costs per subscriber are much lower for the larger companies than the smaller companies. Are the input values for the large companies appropriately reflective of the relative efficiencies of larger scale operations?
- 5) Should the Bureau make any changes to specific opex inputs? To the extent commenters argue opex inputs should be adjusted, they should describe with specificity why the values should be adjusted and by what amount.

Comments

• **Robert Mayer, on behalf of United States Telecom Association**

Question 1:

If all operating expenses were volume sensitive with respect to the number of subscribers, then the take rate would contribute little, if any, additional information needed to identify forward-looking costs. But, a major portion of non-plant network operation expense and general and administrative expense are undoubtedly insensitive to the number of subscribers, which means that the take rate will have a meaningful impact on average costs per subscriber. The Coalition is cognizant of this role of the take rate, although Coalition has no special insight into its appropriate value. However, if the Bureau establishes a cost benchmark for CBs based on a cost percentile rather than a cost value, then the take rate used in CACM will be less important

Response to Question 2:

The Coalition believes that the cost differential between the FTTP network deployment in CACM and the FTTd network deployment in CACM is within the bounds of reason. Though the Coalition members do not have extensive experience in deploying FTTP networks in high-cost rural areas, there is independent corroboration of operating expense reductions when deploying FTTP, though the level of the reduction is less than CACM currently produces.[1] If the CACM operational expense savings for the FTTP network

are overstated, the effect would be to underfund the deployment of broadband and risk the Price Cap carriers' ability to reach the unserved living units in the targeted census blocks with the designated broadband service levels.

[1] A recently issued press release stated: "Small and medium-sized telephone companies that have upgraded their networks to all-fiber are reporting operational cost savings averaging 20 percent annually, according to a study released today by the Fiber to the Home Council Americas, a non-profit group of nearly 300 companies and organizations dedicated to expanding the availability of ultra high speed, all-fiber broadband." See [http://www.prweb.com/releases/...](http://www.prweb.com/releases/)

Response to Question 3:

The \$46 ARPU value was an assumption originally made for the CQBAT model. Since the CQBAT only produced costs for broadband and did not include the additional costs of providing voice service, the ARPU value was for broadband only. However, the CACM model now includes the cost of providing voice service. The ARPU question now becomes more complex, because there can be different subscription rates for the standalone broadband, standalone voice, and a package that includes both broadband and voice. The proposed \$65 ARPU appears to assume that all customers subscribe to a discounted package that includes both voice and broadband. This assumption produces an ARPU that is higher than one reflecting a mix of customers choosing broadband only, voice only, and both, and a mixture is the norm. Consequently, additional analysis is desirable prior to choosing the final ARPU to use in CACM. Nevertheless, the Coalition believes that the calculation of bad debt should continue to be calculated based on 2 percent of ARPU, as proposed in CQBAT. As with the calculation of bad debt, the structure of the calculation for customer operations and marketing should also remain consistent with the calculation as proposed for CQBAT. As elsewhere, this calculation should use an updated ARPU value that reflects a realistic combination of broadband, voice, and package customers. The ARMIS data utilized to develop the relationship between customer operations and marketing expense and revenue is verifiable, and the Coalition members have stated that the relationship continues to be consistent with their current experience.

Response to Question 4:

Yes, the Coalition still believes that the G&A cost inputs used in CACM are appropriate for the large carriers and appropriately reflect efficiencies of larger scale operations. The Coalition worked with CostQuest to develop the values used in CQBAT, which are now part of CACM. The analysis underlying the G&A cost inputs are contained in G&A_NECA 2011 Analysis_V2.xlsx, which is supporting material found on the CACM website.

Response to Question 5:

The coalition is not aware of any OPEX inputs that should be changed at this point. The OPEX inputs that the CACM model is using are largely the same ones that were developed for use in CQBAT by the Coalition working with CostQuest. In general, circumstances have not changed since then to warrant a change in OPEX inputs. As was the case with plant mix, when new information becomes available, the impact of such information on the inputs should be examined at such time.