Preliminary Issues with the Alternative Connect America Cost Model
June 18, 2015

Procedural Background

In the *April 2014 Connect America Fund Order and Further Order of Proposed Rulemaking*, the Federal Communications Commission proposed a voluntary election by rate-of-return carriers to receive model-based universal service fund support.[1] The FCC directed the Wireline Competition Bureau to incorporate study area boundaries and other adjustments to make the Connect America Cost Model ("CAM") for price cap carriers appropriate for use by Rate of Return carriers.

On December 22, 2014, the Bureau announced the first version of the Alternative Connect America Cost Model ("ACAM") for potential use by RoR carriers.[2] ACAM v1.0 was fundamentally identical to the CAM v.4.2 developed for price cap carriers. ACAM v1.0.1 revised cost to reflect 10Mgbps/1Mgbps broadband capability. On March 16, 2015, the Bureau released illustrative results of ACAM v1.0.1 with several support scenarios.

Overview of the ACAM

The ACAM consists of two components: the cost model and the support model.

Cost Model

The cost model calculates the cost of building an efficient gigabit passive optical network ("GPON") to the premises network capable of providing voice over Internet protocol and broadband services. GPONs are also called fiber-to-the-home ("FTTH") networks. The ACAM models a "greenfield" network – it does not take into account any actual network deployment already in place.

The cost model begins by using census, road maps and geolocation databases to develop a model map of customer locations. Then actual wire center locations and road map data is used to develop a theoretically efficient fiber network topology to serve all modeled customer locations. The ACAM uses a standardized set of engineering principle assumptions to build the lowest cost FTTH network using a 32-splitter GPON feeder fiber architecture.

Once the network topology has been developed, cost inputs are selected on a census block basis. Cost inputs are tied to the census blocks modeled population density and terrain assumptions. Cost inputs include plant mix (percentage of aerial, buried, and underground fiber), tax rates and regional cost

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[1] *Connect America Fund*, WC Docket No. 10-90, *Universal Service Reform – Mobility Fund*, WT Docket No. 10-208, *ETC Annual Reports and Certifications*, WC Docket No. 14-58, *Establishing Just and Reasonable Rates for Local Exchange Carriers*, WC Docket No. 07-135, *Developing an Unified Intercarrier Compensation Regime*, CC Docket No. 01-92, Report and Order, Declaratory Ruling, Order, Memorandum Opinion and Order, Seventh Order on Reconsideration, and Further Notice of Proposed Rulemaking, 29 FCC Rcd. 7051 (2014) ¶ 276.

[2] *Wireline Competition Bureau Announces Availability of Version 4.2 of the Connect America Phase II Cost Model and the First Version of an Alternative Cost Model Being Developed for Potential Use in Rate-of-Return Areas*, Public Notice, 29 FCC Rcd. 16157 (2014).

adjustments. Materials and placement costs are then calculated using costs per unit of fiber, outside plant structures (poles, conduit, manholes, etc.), FTTH hardware (splitters, optical network terminals, optical line terminals), network hardware (optical multiplexors, routers), fiber drops, and labor according to the engineering assumptions. Capacity demand is used to determine the sizing of electronics. Asset lifetimes and cost of capital are used to convert the capital network costs into an annual charge.

Operating costs are also modeled. Network plant specific expenses are scaled on the associated capital costs calculated. Non-specific plant costs are scaled based on the total capital network cost. Customer operations expenses are scaled with the number of locations. Operating costs are also converted into an annual charge. The capital and operating annual charges are added and a monthly cost of network service per census block is calculated.

Support Model

The support model is relatively straightforward. Support is provided to eligible locations. Eligibility is determined by (1) the funding threshold; (2) the presence of service by an unsubsidized competitor, and (3) the fund capping mechanism.

Total uncapped support = (Cost of service – Funding threshold) * Eligible locations
Total support = Total uncapped support limited by capping mechanism

The cost of service is compared to the funding threshold value. The Bureau used a $52.50 monthly funding threshold for price cap carriers. This benchmark purportedly represents a blended voice/broadband average revenue per user. The theory behind the threshold is that support should only be provided to locations where the modeled cost of service is higher than can be supported through reasonable end-user rates alone.

The Commission has also indicated that they will exclude areas where an unsubsidized carrier offers broadband service that meets the broadband service performance requirements. For price cap carriers that meant that if a single customer in a census block could be served by an unsubsidized carrier all locations within the census block were ineligible for support.[3]

Universal Service Fund support for RoR carriers has been capped by the FCC at $2 billion per year. Therefore, some capping mechanism must be in place to insure that total support does not exceed the budget. The Bureau has modeled two different mechanisms. The first, an Extremely High Cost Threshold, is the method used for price cap carriers. This capping method excludes the very highest cost locations from support eligibility. The second method modeled was limiting total support per location to $230 per month. A third possibility would be a reduction in all support on a percentage basis.

[3] Per May 6, 2015 discussion with Jim Stegeman, President of CostQuest at WTA Annual Meeting.

Issues Yet To Be Determined

Several issues regarding the support model for RoR carriers remain:

- Should costs be averaged over larger areas than census blocks?
- What funding benchmark should be used?
- What capping mechanism should be used?
- How to determine which areas are served by a competitor and therefore ineligible for support?
- At what threshold of service should an area be considered served by a competitor?
- What are the requirements to prove service by a competitor?
- What challenge procedures will be in place to insure due process?

The next and "final" (per the Wireline Competition Bureau) version of the ACAM will incorporate study area boundary data and competition information from the FCC Form 477 Broadband Data Report. In discussions with RoR carrier representatives, the Bureau has stated their preference to:

- Average costs on a census block basis;
- Set a $52.50 funding threshold;
- Cap support through a $230 per month per location limit;
- Determine competitive service from *FCC Form 477 Broadband Report* data; and
- Provide no challenge process.

Problems with the ACAM

There are notable problems with the use of the ACAM. These can be grouped in three areas: (1) problems with the cost model; (2) problems with the support model; and (3) problems with the model procedure. The attainment of the professed goals of the ACAM will be thwarted if these problems are not corrected.

Problems with the Cost Model

The largest and most obvious problem with the cost model is that it uses capital costs derived from a survey of price cap carriers. The ACAM is supposed to model the costs of an efficient greenfield deployment by a rural carrier in its service area. Since price cap carriers are on average over 1,000 times the size of the average RoR carrier[4], they have economies of scale and scope that result in materials and placement costs significantly below those achievable by RoR carriers. Comparisons of fiber costs in the ACAM to current competitively bid costs of RoR carriers show modeled costs to be as much as 32% lower than the real-world costs.[5] Yet the ACAM fails to recognize these differences. This is analogous to assigning the purchasing power of Walmart to a local dime store. The effect is the ACAM produces significantly lower costs of broadband service than would an actual efficient greenfield rural deployment.

[4] In terms of both revenues and customers served.

[5] Based on independent local exchange carriers in multiple states comparing actual 2014 competitive bids for fiber materials and placement with ACAM assumptions.

An associated problem is the use of oversimplified terrain data and price cap carrier data to determine plant mixes and in the ACAM. Plant mix is the percentage of aerial, buried, and underground (in conduit) fiber. The plant mix directly impacts the modeled cost of service as there may be significant differences between the deployment costs of aerial, buried and underground plant. While the goal of the ACAM is to model an "efficient" network, the plant mix must recognize the actual deployment realities. For example, the plant mix inputs for rural Louisiana show an average of 30% aerial and less than 10% underground deployment for distribution, feeder and interoffice fiber. This is simply not reality for rural Louisiana RoR carriers who must build a network robust enough to survive hurricanes and withstand a high water table in river and bayou country which requires buried and underground conduit placements. In this instance, it is not the amount of rock in the terrain but ground water that necessitates conduit. If the ACAM does not recognize the deployment challenges and necessary costs to build a functioning and lasting network in these areas, it cannot purport to generate service costs with any type of acceptable accuracy. Failure to correct plant mix inputs will result in inaccurate modeled costs of broadband service and the skewed support results for carriers. This result is antithetical to the purpose of the ACAM. The plant sharing tables are also inaccurate for small rural areas. An example used by the FCC in an industry presentation shows that aerial plant structure sharing at 48%. This cuts the per foot cost of aerial structure in half, when in reality the revenues gained from pole sharing may be a fraction of that, if they exist at all.

In addition, there are issues with the ACAM network topology data sets. The road map data used in some rural areas is woefully incomplete and dated. Since the modeled fiber build conforms to the road data, some carriers' areas receive a theoretical network that cannot serve their actual subscriber locations. The road map data errors are compounded because as many as 30% of the end user locations do not have geolocation data and are spread randomly throughout the service area along the "known" roads. This problem may be more acute on Tribal reservations where many homes do not have street addresses and modeled geolocations are suspect. Incomplete road data may cause these locations to be grouped in much greater density than actually exists. Once again, this problem results in inaccurately low costs of service in the model in affected areas.

The inaccuracy of the ACAM model has been demonstrated by an engineering study conducted by Vantage Point Solutions ("VPS")[6]. VPS compared the ACAM capital cost model to actual FTTH engineering data from 144 exchange-wide deployments in more than a dozen states. In almost a third of the cases, the ACAM capital expenditure results for an exchange differed by more than 30% (either higher or lower) from the actual engineering data for that exchange. The mean deviation was 28% for all exchanges examined. The ACAM displayed substantial differences in results regardless of project size, state, or region. The ACAM deviations were greater for those exchanges that serve customers in very high or very low cost areas. Variances to the degree demonstrated will result in inequitable allocations of support to carriers.

Furthermore, VPS has identified the 14 most significant drivers of outside plant costs for RoR rural service areas. The ACAM only accounts for 3 of these factors. Even an issue such as rights-of-way

[6] "*Comparing A-CAM Capital Expenditure Estimates to Exchange-Specific Engineering Data*", Vantage Point Solutions; May 17, 2015.

procurement, a substantial cost contributor, is not accounted for in the ACAM. The model does not appear to contemplate specific, locally-focused regulations encountered by carriers that dictate substantial buried deployment, such as local zoning or other codes.

The ACAM does make some effort to adjust for the operating expense differences due to company size. However, the company size factor lacks the granularity needed to make the adjustments meaningful. For example the small range includes companies with 4,000 to 100,000 locations. This is too broad a range to capture the actual operating differences of smaller carriers.

The rate of return used in the ACAM is 8.5% despite the fact that the FCC authorized rate of return for rural local exchange carriers is 11.25%. The presumptive lowering of the rate-of-return absent a proper proceeding or finding by the Commission is unexplained and unsupported.

Problems with the Support Model

The proposed support model also has issues that run counter to the purported goal of ubiquitous rural broadband deployment.

First is the matter of sufficient support. The FCC has stated that election to model-based support should not negatively impact the support budget for carriers that elect to stay in a modified rate-of-return support mechanism. The current proposals for model-based support election provide a budget consisting of the legacy support the model electors currently receive plus a proposed annual influx from CAF reserves.

If we consider only the carriers in scenario 1.3 that would receive greater than 33% more support from ACAM than they currently receive in legacy support, we find the following:

Number of Carriers	ACAM support	Current HCLS+ICLS	Difference
501	$921.5 million	$362.1 million	$560.4 million

So the 501 carriers most likely to elect model-based support would need an additional $560.4 million dollars per year to be properly funded according to the ACAM, yet the FCC has only offered an infusion of $200 million from CAF reserves. Further examination of the ACAM illustrative results shows that the $200 million per year would be consumed by just the 31 carriers with the largest dollar difference. If one assumes that only carriers that would gain support would elect model-based support, the resulting annual increased demand for support caused by model election requires either a larger fund or a decrease in support to other participants. No tenable solution as to how to sufficiently fund model-based support has been offered by the FCC.

The second major issue is the identification and application of unsubsidized competitors to the model. In the CAM and the Bureau preferred ACAM scenario 1.3, census blocks in which an unsubsidized competitor has expressed the capability to serve a location are eliminated from funding eligibility. Currently, competition in a census block is determined by data from the NTIA State Broadband Initiative. This same data, used to create the National Broadband Map, is notoriously inaccurate in representing the presence and/or speeds of broadband services. While the FCC has expressed the opinion that the use of FCC Form 477 data will provide sufficient data to determine the presence of competition, many carriers

doubt the claims of their competitors. Furthermore, defined competition is not limited to landline broadband providers but also includes fixed wireless broadband. Many stakeholders question not only the veracity of the service capabilities and coverage claims of wireless, but whether the quality of service provided can keep pace with the ever-increasing broadband speeds demanded by the FCC. Based on these legitimate customer service concerns and technological challenges, one should question whether fixed wireless should be considered when determining areas of support eligibility. In addition, there appears to be no recognition of carrier of last resort obligations when considering support in areas with competition. The concerns around the use of competitor data are crucial as the FCC has indicated an unwillingness to provide due process via a meaningful challenge process.

Another concern with the ACAM support model is the opportunity for financial windfall. The ACAM is a theoretical, greenfield model and as such provides no measure of existing broadband deployment within a service area. The current rate-of-return USF mechanisms function as reimbursement programs – carriers do not receive support until after they have deployed broadband. Carriers that have already deployed broadband in high cost areas are still eligible to receive model-based support. This could result in a scenario where a carrier could receive additional support from the ACAM with no additional build-out responsibilities.

Procedural Problems

The Commission has devoted a significant amount of time and resources to produce a cost model for price cap carriers. Even a casual observer would note the stark contrast between the processes used for price cap carriers and those for rate-of-return carriers.

Issue	Price Cap CAM	Proposed RoR ACAM
Time to develop model	3 ½ years	3 months
Carrier involvement in model development	Surveys of actual costs and plant mixes used; worked with CostQuest on inputs and processes	None
Challenge process	119,000 census blocks reviewed	None
Implementation timeline	3 ½ years	Less than 6 months
USF Budget increase	$700 million (64% increase)	$100 to $200 million (6% to 12% increase)
Phase 1 incentive	$300 million	$0

Also, there are not enough FCC resources devoted to the task. Per Commissioner O'Reilly, the FCC has only 5 staff members working the majority of their time on rate of return Connect America Fund issues.[7] The FCC currently employs over 1,720 staff members with a budget in excess of $400 million, yet has devoted only 0.29% of their human resources to provide universal service support solutions to rural America.

Conclusion

We have heard the argument that the ACAM does not need to be particularly accurate in developing costs of service for rate-of-return carriers since it is a voluntary, alternative way to distribute a fixed amount of support. We reject that argument based on the Commission's own statements and goals. The FCC set out objectives for USF support in the *2014 Seventh Order of Reconsideration and FNPRM* which included that support must be equitably and fairly distributed. The model used for model-based support must accurately reflect the costs of serving rural areas so that high cost areas may be properly identified and the cost variability between different service areas correctly assessed. Regardless of whether the ACAM is voluntary, it must meet the FCC's objectives for equitable and fair distribution of support. The ACAM produces materially inaccurate broadband cost of service results for rural areas, and therefore, support cannot be equitably calculated or distributed by the ACAM.

The ACAM provides opportunities for financial windfall which would not fairly distribute support. There are significant questions regarding the definition and presence of competition which impact the eligibility of locations for support. The procedures used by the FCC to develop and implement a cost model for rate-of-return rural areas has been rushed, lacks the involvement of the affected carriers, and does not provide sufficient funds to provide for actual broadband deployment.

[7] Commissioner Michael O'Reilly presentation at WTA 2015 Spring Meeting, May 5, 2015.