June 24, 2015

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Connect America Fund
WC Docket No. 10-90

Dear Ms. Dortch:

In April 2014, the Commission proposed a path by which rate-of-return regulated carriers could elect voluntarily to obtain high-cost support in accordance with a forward-looking cost model.[1] The Commission directed the Wireline Competition Bureau (Bureau) to modify the Connect America Cost Model developed for price cap carriers for use by rate-of-return regulated (RoR) carriers. On December 22, 2014, the Bureau announced the availability of the Alternative Cost Model (A-CAM) for potential use in rate-of-return areas– although it was made clear in that announcement that the model was still subject to further review and development.[2]

The associations listed below have had numerous discussions with member companies and Commission staff at all levels regarding implementation of an optional A-CAM for RoR carriers desiring to pursue such a path, and they have members that are indeed interested in at least seriously reviewing and possibly electing such a path. As indicated in prior correspondence, the associations agree that a model-based path should be available solely and entirely on a voluntary basis, have at least a ten-year term of support, be available on a study area by study area basis, and be implemented as soon as possible.

The ultimate success of an optional model-based program for RoR carriers will depend on the accuracy of the ultimate model in identifying the "specific, predictable, and sufficient" support required under section 254(b)(5) of the Communications Act of 1934, as amended.[3] While the associations understand and agree that there can be no "perfect model," preliminary observations

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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).

[3] 47 U.S.C. § 254(B)(5).

of the A-CAM have raised some concerns, indicating that the model's inputs and outcomes require greater examination both prior to an initial limited voluntary election and even more so for any possible voluntary use beyond such an initial phase.

Reviewers have noted, for example, that the model creates extreme and unexplained increases and decreases in support. If the A-CAM were adopted by all carriers "as is," 67 percent of companies nationwide would see support changes (both increases and decreases) of more than 50 percent.[4] Even if one were to dismiss "actual costs" as irrelevant to the model's accuracy or fitness for its intended purpose, the reasons for such wide variations at least need to be better understood to determine whether the model is indeed serving that intended purpose and, more importantly, serving faithfully and accurately the broader statutory mission of establishing and sustaining universal service.

The A-CAM at times also seems to produce counter-intuitive results as compared to that intended purpose. Many companies that have already deployed 10/1 (or higher speeds of) broadband to major portions of their study area would receive large support increases under the model, while some companies reporting virtually no deployment of 10/1 broadband would receive *reductions* in support. For example, one company that reportedly has 10/1 capability throughout its entire network would experience a 793 percent *increase* in support, while 55 companies that lack any 10/1 capability whatsoever would experience decreases.[5] The associations recognize that companies with broadband deployments of course encounter significant capital cost recovery and maintenance expenses for such networks once fiber is fully deployed, and ongoing support is an essential component of any sustainable universal service program. But, at the very least, significant shortfalls in support for companies that have not deployed fiber networks will have actual and substantial adverse real-world implications for consumers in need of at least basic levels of broadband.

There may be some justification for these anomalies in support results, but what that may be is not clear on the face of the model. These anomalies at a minimum highlight the need for more detailed examination of the accuracy of model's cost predictions, the criteria used to determine which locations in RoR carrier service areas are considered eligible for support, and ultimately the "dials" that are used to calculate the amounts of support distributed to specific carriers. This is no mere academic exercise of comparing support levels identified by differing methodologies; these concerns are supported by wire center-specific engineering data, and further analysis should help identify where and why the model may warrant improvement and refinement.

Indeed, putting aside altogether distributional differences that may be driven by policy judgments or budget constraints, analyses of engineering data from 144 wire center-wide FTTP projects, in more than a dozen states, show significant differences in *costs* between model predictions and actual deployments. In one half of the cases studied, A-CAM capital expenditure results differed from construction costs (either engineered or actual) by more than 20 percent in either direction, and in one third of the cases the differences were more than 30 percent. These

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[4] *See Wireline Competition Bureau Releases Updated Report for Alternative Connect America Cost Model Version 1.0.1*, Public Notice, 30 FCC Rcd. 2304 (2015) n.3, Scenario 1.3.

[5] *Id.*

kinds of "cost misses" may not present a problem for large price cap companies with many wire centers, where misses may offset each other, rough edges can be "smoothed," and results can work "on average." In contrast, most RoR companies do not have a large number of wire centers, however, and such large cost inaccuracies may lead to inappropriate increases or decreases in support amounts.[6]

While cost deviations between ACAM and construction data were significant regardless of project size, state or region, in general A-CAM deviations were greater for wire centers with very high cost or very low cost areas. Furthermore, the model overestimated the costs for 78 percent of the higher cost wire centers, and underestimated the costs for 72 percent of the lower cost wire centers. Because the A-CAM deviations appear to be asymmetrical for high- and low-cost wire centers, the model's misses may not "even out" over time, even for companies with many wire centers.

There could be many potential explanations for the observed model cost inaccuracies, and these explanations should be treated as "leads" in terms of investigating potential refinements and improvements to the model. This being said, the most obvious explanation is that the model accounts for only a few of the actual cost drivers of outside plant expenses (density, distribution of locations, and soil type/terrain). The model does not include many other factors known to significantly affect costs for rural broadband deployment, such as right-of-way availability, availability of conduit, weather patterns, and state, local, and national park regulations, to name a few. A more comprehensive list of outside plant construction cost drivers is contained in Exhibit A, providing a "roadmap" of other factors for consideration in improving the model over time. These are factors that model designers should move quickly to examine and incorporate (or provide a rationale for dismissal of such factors), so that a determination can be made of when voluntary elections will be opened initially.

The model also appears to be based on certain outdated engineering assumptions. For example, the Gigabit-capable Passive Optical Network (GPON) network design assumptions built into the model are not always a good fit for small carriers serving rural areas, nor do these assumptions allow for the kinds of scalable technology that will enable networks to keep pace with the kinds of broadband speeds that are "table stakes" now and the even greater speeds that will be expected (or required) in the future. The model's engineering architecture also assumes more customers and more traffic demand than many RoR carriers have, and thus small companies cannot reach the levels of efficiency this model expects. Smallness and unique geography often drive a different architecture and different routing than is called for in the model (*e.g.*, use of centralized splitters instead of splitters in the field). In addition to scalability, the use of a network design that centralizes splitters – especially in serving consumers located over substantial distances – can lead to significant benefits in terms of maintenance needs.

[6] Based on the most current view of NECA FCC Tariff No. 4 data, RoR companies have an average of less than 5 wire centers per study area, and over 40 percent of the companies have only one wire center per study area. This can be compared to an average of 55 wire centers per study area for price cap carriers.

The associations and other interested stakeholders are continuing efforts to study these and additional issues, and note this letter does not attempt to provide an exhaustive or detailed list of reasons as to why model results may differ from actual results and/or miss actual investment and operating challenges. Nor should this letter be perceived as attempting to foreclose or preclude any use of the model on a voluntary basis at a logical point in time. Rather, this letter is intended as a launching point for more detailed discussion and analysis with the Commission and specifically with those to whom the Commission (*e.g.*, CostQuest) has turned for model design as use of the model is being considered. The associations are eager to work quickly with the Commission and these other entities to identify reasons for apparent anomalies in model outputs and potential adjustments to improve the model's accuracy, and also hope to work with the Commission to develop clear funding criteria and build-out obligations, so that those firms that do choose to elect model support have adequate incentives and capabilities to meet evolving technical and market demands. The associations strongly believe a more studied approach to formulation and refinement of the mechanism will increase industry confidence, leading to the potential for greater usefulness of the A-CAM on a voluntary basis among the rural industry and ultimately benefitting the consumers who will make use of the networks to be deployed using model-distributed resources.

Even as the Commission moves forward with implementation of an optional model-based path for RoR carriers, there also remains a clear and urgent need to make changes to existing support mechanisms to support the networks built and operated by RoR carriers. The rural associations have previously provided the Commission with several options for how to address much-needed updates to existing mechanisms. We look forward to prompt discussion and Commission action on these proposals or any other detailed plans that might provide for clear rules and sufficient and predictable recovery of costs, even as the prospect for voluntary model-based distributions is also further examined and explored.

Respectfully submitted,

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Exhibit A: Outside Plant Construction Primary Cost Drivers

Location-Specific Cost Drivers [Determined prior to construction with maps, etc.]	
Density of Locations	For rural areas, as the average number of locations per square mile decrease, the investment per location increases.
Distribution of Locations	For rural areas, the needed investment is more if the customers are uniformly distributed rather than grouped in smaller areas.
Environmental or Historical Factors	Areas with protected plant or animal species or state/national historical sites require additional studies, permits, and special construction techniques.
State/National Forests and Parks and Reservations	Permitting in State/National forests, parks, and tribal lands can be time consuming and the additional requirements placed on contractors increase overall costs.
Construction Cost Drivers [Specific geography, local codes, etc.]	
Soil Conditions and Terrain	Hard soils could increase project cost by 5% or more because of slower construction and heavier equipment requirements. Rock, lava, or large rocks in the soil could increase project costs significantly.
Existing Utilities	Project cost increases as the number of utilities (gas, water, power, etc.) in the construction corridors increases.
ROW	Areas with small construction corridors require slower and thus more costly construction and often require a lot of tree trimming, brush clearing, etc. ROW is also difficult when crossing waterways and railroads. Can also be difficult and expensive in areas of demand, such as around oil fields.
Number of Bores Required	Especially in rural areas, boring is slower and more expensive than plowing cable. Culverts, hard-surface driveways, streams, inclines too steep for a plow must be bored.
Depth of Cable	Mainline cable is normally placed at a depth of 36 inches. Local laws or customer requirements may require a depth of 48 inches. Construction is slower and larger equipment is required for deeper cable, both of which drive up cost.
Contractor Workload	Contractors may bid a lower price for the project if their employees are not busy.
Material Shortages	Short-term material shortages (e.g., fiber cable)
Work Location	Locations farther from a contractor's office require more travel, both for employees and equipment hauling, so cost is higher.
Weather Patterns	In areas with more downtime due to weather, construction is slower and results in a higher project cost.
Local Cost of Living	Some areas, especially tourist areas, have higher hotel and food prices, which could increase overall project cost between 2% and 3%.
Design-Driven Cost Drivers [Can be influenced by local requirements, engineering, or owner preferences]	
Dedicated vs. PON Architectures	Outside plant designs using dedicated fiber between the customer location and the central office, cabinet or hut, are more expensive than Passive Optical Network (PON) designs.
Construction Timeframe	A shorter construction timeframe due to seasonal impacts normally increases cost, since it limits the number of bidders, increases the project's difficulty, and increases the contractor risk.
Availability of Spare Conduit	Conduit increases the cost of the initial construction, but can reduce the cost of future construction projects.
Fibers per Location	The higher fiber count per customer location the higher the material and splicing costs.