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July 29, 2011

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, S.W., Room TW-B204
Washington, DC 20554

Re: United States Cellular Corporation
WC Docket No. 05-337; CC Docket No. 96-45;
GN Docket No. 09-51; WC Docket No. 06-122
CC Docket No. 01-92

Madame Secretary:

On behalf of United States Cellular Corporation (“U.S. Cellular”), we write to provide the Commission with information requested as a follow up to our meeting of June 30, 2011. With the submission of a new proposal into the record today, U.S. Cellular plans to submit additional information into the record in the near future.

Process Questions.

Question: Is it possible to provide a single wireless model for the entire country, showing what it costs to support mobile broadband and explaining how the model works?

Response: A model for the entire country, showing all states, can be developed. Understanding that the concept of using a model might not be adopted, U.S. Cellular asked its consultant to model four states, with varying demographics and topography, to demonstrate the efficacy of a model. U.S. Cellular has asked its consultant to continue efforts on implementing a national model, including a description of how it works, for the Commission’s use.

Question: Will other parties be able to access the model and play with it? We want the public to have this opportunity as part of this process.

Response: With a protective order in place, our consultants will allow others to view and test drive the model. Our consultants can also place the model's source code into a controlled environment for viewing. We will need some lead time to set this up and we would like to understand whether the Commission can assist in accessing funding to defray the costs of setting up the network environment needed to permit a more sophisticated tool that other consultants can use.

Question: Please outline any proprietary issues relating to your consultant's intellectual property.

Response: There are two issues. The cell database and the logic/tool are both proprietary to the consultant. They will allow use of these two items, with proper protection. We believe that both can be made available in connection with this proceeding, but would like to discuss the specifics with the Commission further.

Model Questions.

Question: How would the FCC use a model? What has been presented shows census blocks where costs exceed revenues, but it is necessary to see assumptions that provide the results provided to date. Does U.S. Cellular envision using a single model where the entire country would be modeled based on the same set of assumptions?

Response: U.S. Cellular's consultant envisions using a single model. The model inputs should be set to account for varying characteristics around the country. For example, operational cost inputs should capture differences between urban, suburban, and rural. Capital cost inputs should capture the impact of company size along with the regional cost differences in items such as real estate, labor and material. That being said, if the Commission wishes, the model can be run with different assumptions and inputs at the state level.

Question: It is the Commission's understanding that U.S. Cellular proposes that each eligible provider would access per-line support at the census block level, rolled up to some higher level for wireless coverage, and that there could be more than one carrier drawing support. Is the model capable of showing lower costs in areas where service already exists?

Response: The model captures cost at the Census Block level. Currently, the cost per subscriber across a cell area is the same. It would be possible to use the potential active subscriber counts and actual differences in demand in a census block to differentiate a set of customers within a tower area that would be driven by demographics and/or competition. Moreover, the model can capture existing tower sites and coverage in development of the costs. And most likely, those areas that are serviced today will show a lower cost (which triggered the build in the first place) or will show that with the current USF support, the area is economically viable.

Question: Does U.S. Cellular have any creative thinking about where this patchy coverage is – and can the FCC get better data than the American Roamer map?

Response: As we stated previously, the problem of “some service in some areas” is by far one of the problems that the mobile broadband fund should seek to solve. U.S. Cellular’s drive testing confirms that many, if not most, rural Americans do not today have coverage or high-quality coverage that provides consistency of service quality that is reasonably comparable to that which is available in urban and suburban areas. As of this date, U.S. Cellular believes American Roamer is the best source of public data at an aggregate level. However, if there is interest, RF tools are available that could be used to create improved maps at a market level. The issue will be collecting the data to feed these tools – tower locations, radio heights, and other parameters that provide more accurate coverage data.

U.S. Cellular notes here that mechanisms that target support, require carriers to provide service throughout an area, in response to all reasonable requests for service, combined with appropriate accountability measures, are the most effective in ensuring that carriers build cell sites that fill in dead zones in rural areas suffering from the “some service in some areas” problem.”

Question: Can the model match up areas of patchy service with lower costs, as opposed to barren areas that are higher cost?

Response: If improved signal propagation maps are available, the model can be adapted to capture patchy areas and apply additional costs to account for the need for a fill-in cell site, a microcell, or a home mounted antenna.

Question: Could the model be used to identify other factors to determine whether areas should be eligible, or how much support is actually needed? For example, could a model be used to identify areas that have no 4G, and are not expected to get 4G?

Response: From an economic standpoint – yes. A model can determine the appropriate investment to cover an area, in combination with an expected take-rate of the service over time. This information, in combination with expected revenue per subscriber would allow a determination of whether an area has a positive or negative economic contribution (i.e., if the investment would, given the assumptions, pass a realistic internal rate of return hurdle rate).

With this in mind, two types of competing constructs exist. One construct suggests that marginal areas will eventually be funded by private investment; and that a subsidy will not be needed. This construct suggests that there should be a minimum funding threshold that has to exist before any funding is provided.

The second construct suggests that marginal areas (small positive NPV or small negative NPV) will not be funded for some period of time. Most firms rank projects with internal rate of return and fund projects according to rank until either: a) the capital budget is exhausted; or, b) projects fall below their internal rate of return (“IRR”). Generally, it is the capital budget that is the binding constraint. This construct suggest that there may need to be a funding premium to incentivize construction.

Question: Can a model be used to identify an area smaller than a cell site that needs support?

Response: Potentially, yes. With good coverage data, “adders” can be introduced in certain patchy areas to capture investment associated with microcells, customer mounted antennas, fill-in cell sites, or other solutions. These would be added specific to the area, not the full cell site.

Question: Precisely how would a model identify an area within an existing footprint where existing signal is relatively weak?

Response: This requires better coverage maps that capture terrain, foliage and clutter issues. It is not in the model right now, but could be accomplished with a robust propagation tool.

Question: How do you divide up the funds available for a fixed broadband fund and the mobile broadband fund?

Response: U.S. Cellular supports having completely separate funds – a mobile broadband fund and a fixed broadband fund. Fund size should be driven by how aggressively the FCC wishes to build out, and it should be driven by how much implicit support is removed from carrier rates and access charges. A mobile broadband fund should be at least \$1.3 billion, which is roughly the size of the Competitive ETC fund at the 2008 cap level, to ensure that significant progress is made in constructing new wireless infrastructure in rural America. Moreover, the Commission should take into account projections from its Technology Advisory Council, showing that by 2018, as few as 8% of U.S. residences may be subscribing to basic landline telephone service.¹ While the wireline network will still be robust, landline POTS will be dramatically lower and more support should be shifted to mobile wireless platforms that consumers are switching to. Support should be portable, so that the carrier that serves the customer gets the support, which provides appropriate incentives to deliver high quality service. Separate funds permit portability, which the Commission has always stated to be a core component of competitive neutrality, while changing the identical support rule that provides support to multiple technologies based on the costs of the most inefficient provider of service.

Question: How would a model adjust support levels over time?

Response: A model can and should be updated over time (e.g., every 2-3 years) to incorporate revisions to both revenue (market and service) and cost (technology and demand).

Question: How can the FCC ensure that fund size does not grow?

Response: Funding on a per subscriber basis (rather than the current ILEC total accounting costs as exists with current ILEC voice subsidy systems) has great advantages for controlling fund size. While there are other options for controlling fund size, each has issues of sufficiency: the costs are what they are (as determined in part by the input assumptions). One technique that could reduce funding needs (and growth in the fund) is a funding cap per subscriber. This would “push” funding towards those areas that are more marginal, i.e., that require smaller funding levels. This wouldn’t preclude operators from deploying in such areas (although it is certainly less likely that they would), but it would cap that support.

¹ See, Technology Advisory Council, Status of Recommendations, June 29, 2011, <http://transition.fcc.gov/oet/tac/TACJune2011mtgfullpresentation.pdf> at Slide 12.

Question: How does wireless envision the transition of the existing system to a model? What would be the time line and how do we phase down the existing program and ramp up a new system using a model?

Response: The Commission should continue under the existing mechanism until a model is developed and fully vetted. Once a model is developed, support should begin to transition to the new mechanism approximately one year after its adoption, to provide carriers with an appropriate period of time to prepare, and to permit states adequate time to designate new CETCs in high-cost areas where no carrier is designated as an ETC. Support would migrate to the new program in phases, as carriers elect support based on the model, with the new mechanism fully implemented within five years.

Question: What is the service requirement for an area that gets support under the model?

Response: Mobile broadband providers must provide average throughput at a speed determined by the Commission, updated periodically to account for advances in technology. Service must be offered, either through the carrier's facilities, or a combination of facilities and resale, throughout the area where consumers live, work and travel. Individual requests for service at a residence or business must be handled on a case-by-case basis, with the FCC or state commissions enforcing the statutory requirement that a carrier respond to all reasonable requests for service, and determining whether additional state support should be provided when construction costs are extraordinary.

Question: How can the model capture costs associated with suboptimal antenna placement, such as poor tower placement or poor placement of an antenna?

Response: With access to tower locations and antenna heights, a model can utilize the information to show that 'adders', as noted above may be required in places where initial siting was poor. However, it must be recognized that some of the suboptimal placement could be driven by site availability limitations that were in place at the time service was deployed (e.g., a land owner that did not want to lease land for a cell site). So, the judgment of what is suboptimal is both technical (for optimal propagation) and legal (for site availability). Unless eminent domain is to be invoked for obtaining site locations, the legal issues probably weigh heavier on sub-optimized placements.

In practical terms, a carrier participating in the program must figure out how to provide coverage and respond to requests for service. It may not be necessary for a model to determine support at such a granular level. That is, if a model provides support at a census block level, then

it is up to the carrier to determine, taking expected costs into account, if it can meet the service requirements with the support and the expected customer penetration. As stated above, in extraordinary circumstances, a carrier should be able to petition a state commission for additional funding. The ability to access state funding is one component not fully developed since the 1996 Act, despite Congressional intent that universal service is the responsibility of both federal and state governments.

Question: Are the costs, take rate, and assumptions concerning ARPU provided to the Commission consistent with areas where mobile voice or broadband services are already available?

Response: Costs are based on current deployment, so yes they are consistent with where mobile service is available, but not necessarily mobile broadband. The take rate is not based on where mobile voice or broadband are currently available. This is a key input that policymakers must settle on in order to develop a finished broadband model. ARPU was fixed based on an estimate of where the mobile market may be in two to three years. The Commission may gather additional information in order to arrive at the appropriate number.

Question: What assumptions have been made about speed/throughput at the cell edge and what capacity per user has been used?

Response: The following assumptions were made concerning propagation using a modified Okumura-Hata model. Coverage design was targeted to provide a user uplink rate of 512 kbps. We are advised by our consultant that the model assumes "in building coverage" and assumes that the signal at the cell edge delivers with enough strength for voice and broadband use.

Spectrum Band = 850 Mhz

Antenna Height = 150'

User Equipment Transmit Power = 26 dB

Base Station Transmit Power = 43 dB

Base Station Receiver Sensitivity = -110.7 dB Antenna gain = 14 dB Cable Loss = 2dB Shadow Fading = 5.6 dB Antenna Diversity = 3 dB Penetration Loss = 12 dB

Hon. Marlene H. Dortch

July 29, 2011

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I trust that you will find this information to be useful. If you have any questions or require any additional information, please contact undersigned counsel directly.

Sincerely,

A handwritten signature in cursive script, appearing to read "David A. LaFuria".

David A. LaFuria
Counsel for United States Cellular Corporation

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