PUBLIC NOTICE

Federal Communications Commission
445 12th St., S.W.
Washington, D.C. 20554

News Media Information 202 / 418-0500
Fax-On-Demand 202 / 418-2830
TTY 202 / 418-2555
Internet: http://www.fcc.gov

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WIRELINE COMPETITION BUREAU SEEKS COMMENT ON MODEL DESIGN AND DATA INPUTS FOR PHASE II OF THE CONNECT AMERICA FUND

WC Docket Nos. 10-90, 05-337

Comment Date: July 9, 2012
Reply Comment Date: July 23, 2012

I. INTRODUCTION

1. On November 18, 2011, the Commission released the *USF/ICC Transformation Order and FNPRM*, which comprehensively reforms and modernizes the universal service and intercarrier compensation systems.[1] Recognizing, among other facts, that over 80 percent of the more than 18 million Americans unserved by broadband live in price cap territories, the Commission provided for up to $1.8 billion to be spent each year, over a period of five years, to make broadband available to as many unserved locations as possible, as well as sustain voice and broadband in high-cost areas that would not be served absent support. As such, the Commission adopted a framework for providing ongoing support to areas served by price cap carriers, including areas where broadband service is not currently provided, known as the Connect America Fund (CAF) Phase II. Specifically, the Commission will provide ongoing support to these areas through "a combination of a forward-looking cost model and competitive bidding."[2] In this Notice, the Wireline Competition Bureau (the Bureau) seeks comment on a number of threshold decisions regarding the design of and data inputs to the forward-looking cost model, and on other assumptions in the cost models currently in the record.[3]

II. BACKGROUND

2. In the *USF/ICC Transformation Order*, the Commission adopted Phase II of the CAF: "a framework for extending broadband to millions of unserved locations over a five-year period, including households, businesses, and community anchor institutions, while sustaining existing voice and

[1] *See Connect America Fund*, WC Docket No. 10-90, et al., Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 (2011) (*USF/ICC Transformation Order and FNPRM*).

[2] *Id.*, 26 FCC Rcd at 17673, para. 23.

[3] In the *USF/ICC Transformation FNPRM*, the Commission sought comment on the competitive bidding component of CAF Phase II. *See id.*, 26 FCC Rcd at 18085-92, paras. 1190-1222.

broadband services."[4] Using the model, the Commission will estimate the support necessary to serve areas where costs are above a specified benchmark, but below a second "extremely high-cost" benchmark.[5] The Commission will offer each price cap carrier a model-derived support amount in exchange for a commitment to serve all locations in its service territory in a state that, based on the model, fall within the high-cost range (above the specified cost benchmark but below the "extremely high-cost" benchmark) and are not served by a competing, unsubsidized provider.[6] As part of this state-level commitment, the price cap carrier will be required to ensure that the service it offers meets specified voice and broadband performance criteria.[7] In areas where the price cap carrier refuses the state-level commitment, support will be determined through a competitive bidding mechanism.[8]

3. The Commission delegated to the Bureau the task of selecting a specific engineering cost model and associated inputs, consistent with the parameters set forth in the *USF/ICC Transformation Order*.[9] Specifically, "the model should be of wireline technology and at a census block or smaller level."[10] In addition, the Commission directed the Bureau to ensure that "the model design maximizes the number of locations that will receive robust, scalable broadband within the budgeted amounts."[11] Moreover, the Bureau's "ultimate choice of a greenfield or brownfield model, the modeled architecture, and the costs and inputs of that model should ensure that the public interest obligations are achieved as cost-effectively as possible."[12] And the Bureau must "consider the unique circumstances of [Alaska, Hawaii, Puerto Rico, the U.S. Virgin Islands and Northern Marianas Islands] when adopting a cost model" and must "consider whether the model ultimately adopted adequately accounts for the costs faced by carriers serving these areas."[13]

4. On December 15, 2011, the Bureau released a *Public Notice* requesting interested parties to submit proposed forward-looking cost models.[14] In response, parties submitted two models into the

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[4] *Id.*, 26 FCC Rcd at 17725, para. 156.

[5] *Id.*, 26 FCC Rcd at 17725, para. 156. Price cap and rate-of-return areas with costs above the second benchmark should be eligible to receive support from the Remote Areas Fund. *See id*., 26 FCC Rcd at 17728, 18093-94, paras. 167, 1229.

[6] *Id.*, 26 FCC Rcd at 17725, para. 156.

[7] *Id*.

[8] *Id*.

[9] *Id*., 26 FCC Rcd at 17735, para. 187.

[10] *Id.*; *see also id.* at 17736, para. 189.

[11] *Id*. at 17735, para. 187. Specifically, the model should direct funds to support 4 Mbps/1 Mbps broadband service to all supported locations, subject only to the waiver process for upstream speed described above, and should ensure that the most locations possible receive a 6 Mbps/1.5 Mbps or faster service at the end of the five year term, consistent with the CAF Phase II budget. *Id*.

[12] *Id.*

[13] *Id*.; 26 FCC Rcd at 17737-38, para. 193.

[14] Request for Connect America Fund Cost Models, Public Notice, WC Docket Nos. 10-90 and 05-337, 26 FCC Rcd 16836 (2011) (Request for Model PN).

record. One model, submitted by the ABC Coalition, estimates the cost of providing service to the entire nation.[15] The second model, submitted by ACS, estimates the cost of serving Alaska only.[16]

5. This Public Notice is the next step of an open, deliberative process to develop the final model design and inputs. The Bureau anticipates that, in addition to comments in response to this Public Notice, there will be additional opportunities for further public input before a final model is adopted and support levels are established.[17] The further opportunities may include additional comment periods or workshop discussions, and may address in further detail matters raised in this Public Notice or questions not reached by this Public Notice, such as the appropriate prices to assign to specific cost inputs to the model. The Bureau may modify model design and inputs, including potentially combining elements of multiple models into a new model, in response to input it receives from the public.[18]

III. SUMMARY

6. This Notice identifies several significant threshold model design decisions and seeks comment on specific proposals for the design of the model and data inputs to be used. This is not an exhaustive list of such issues, but represents the next step in the open, deliberative process to determine the design of the model the Bureau will ultimately adopt. The Bureau also seeks comment on commenters' identification of additional issues that need to be developed in the record of this proceeding.

7. This Notice first seeks comment on what wireline network technology and design the model should use to calculate costs. This question includes the important threshold matters of whether the model should should presume green-field or brown-field deployment and whether the model should estimate the costs of Fiber-to-the-Premises (FTTP) or Digital Subscriber Line (DSL) (including Fiber-to-the-Node (FTTN)) technology. Closely related is the question of what terminal value to assign to the modeled network – book value, economic value, or zero value. The Notice then seeks comment on whether the model should estimate the total costs of serving the entire service area so that shared costs may be distributed between areas that are eligible and ineligible for support or estimate only the standalone costs of areas eligible for support. Next, the Notice seeks comment on how shared network costs should be distributed to the census-block (or smaller) area. The Notice also asks whether the model should calculate support for areas to which broadband has already been deployed or only for unserved

[15] Letter from Jonathan Banks, USTelecom, to Marlene H. Dortch, Federal Communications Commission, filed Feb. 13, 2012 (attaching updated documentation of CQBAT model) (CQBAT letter). This submission updated the ABC Coalition's prior proposal for a forward-looking model, which had been submitted prior to the release of the *USF/ICC Transformation Order*. Letter from Robert W. Quinn, Jr., AT&T, Steve Davis, CenturyLink, Michael T. Skrivan, FairPoint, Kathleen Q. Abernathy, Frontier, Kathleen Grillo, Verizon, and Michael D. Rhoda, Windstream, to Marlene H. Dortch, Secretary, FCC, WC Docket No. 10-90 et al., Attach. 1 at 13 (filed July 29, 2011) (ABC Plan). The ABC Coalition model was submitted pursuant to a protective order adopted by the Bureau. *See Connect America Fund*, *High-Cost Universal Service Support*, WC Docket Nos. 10-90 and 05-337, Second Supplemental Protective Order, 27 FCC Rcd 1503 (2012).

[16] Comments of Alaska Communications Systems Group, Inc., WC Docket Nos. 10-90 and 05-337 (filed Feb. 1, 2012); *See Connect America Fund*, *High-Cost Universal Service Support*, WC Docket Nos. 10-90 and 05-337, Second Protective Order, 27 FCC Rcd 1494, 1494 n.2 (2012).

[17] Request for Models PN, 26 FCC Rcd at 16837, para. 3.

[18] *Id.*

areas.[19] Finally, this Notice seeks comment on what benchmarks should be used to identify areas with costs that are too low, or too high (and therefore subject to support under the Remote Areas Fund), to receive support pursuant to CAF Phase II.

8. In addition, to expedite the model development process, the Bureau also initiates comment on data inputs – specifically, on data sources relating to geography and carrier plant. The geographic information systems (GIS) inputs on which this Notice seeks comment include the definitions of existing wire center boundaries and broadband footprints, and the locations of business and residential customers. Plant-related data questions raised in this Notice relate to plant mix (*i.e.*, mix of aerial, underground, and buried plant), the location and age of existing plant, the gauge of existing twisted-pair copper wires, and validating other cost inputs to the model.

9. Finally, the Bureau seeks comment on the models submitted by the ABC Coalition and ACS. Specifically, the Bureau asks that commenters identify model design decisions, inputs, or other assumptions included in those models that require further analysis and record development..

10. The Bureau presents and seeks comment on several approaches for addressing each of the model design issues summarized above. The Bureau encourages commenters to address in depth how to address the potential limitations of some approaches or to propose additional alternatives, including hybrid approaches that bring the benefits of multiple methodologies. Similarly, although the Bureau references the models filed by the ABC Coalition and ACS, and encourages commenters to address those models specifically, commenters should not be constrained by the assumptions contained in those models.

11. Commenters should explain in detail why the positions they argue for are preferable to others, supporting their positions with arguments grounded in economic principles, data and analysis. Commenters are encouraged to take a position on each of the issues addressed herein, and explain how those positions, in combination, establish a reasonable approach to modeling and are consistent with the requirements set forth in the *USF/ICC Transformation Order*. The Bureau is particularly interested in understanding how specific choices impact the model with respect to (1) precision (i.e., the granularity of the model at a geographic or other level); (2) accuracy (aligning modeled costs with the forward-looking costs of an efficient provider); (3) simplicity (reducing the computational complexity); (4) accessibility (ease with which the public can evaluate and comment on the model); (5) administrative feasibility (the burden on carriers, the Commission, or other interested parties and the time necessary to implement), and (6) the cost of implementation. Commenters are invited to suggest additional criteria that the Bureau should use to evaluate different model choices.

IV. DISCUSSION

A. Model Design

1. What wireline network technology and design should the model use to calculate costs, and how should the model calculate the terminal value of the network?

12. The choices of network technology (e.g., FTTP or DSL) and design (green-field or brown-field deployment) – along with terminal value of the network (book value, economic value, or zero

[19] In the *USF/ICC Transformation Order*, the Commission limited support pursuant to CAF Phase II to areas not served by unsubsidized competitors. *USF/ICC Transformation Order*, 26 FCC Rcd at 17729, para. 170. The model could calculate support for areas to which an incumbent carrier had deployed broadband because, for example, the carrier had received legacy forms of high-cost universal service.

value) are likely to be major drivers of cost. Insofar as both issues relate to the timeframe over which network costs are evaluated, there may be a logical interrelationship among these choices.

13. The Bureau emphasizes that model design choices will not obligate providers to deploy the modeled technology – providers can deploy any technology that meets the obligations laid out in the *USF/ICC Transformation Order*.[20] The requirements laid out in the *USF/ICC Transformation Order* focus on the services delivered, not the technology used.[21]

14. Consistent with the *USF/ICC Transformation Order*, the model must incorporate the most appropriate approach to determining an efficient provider's forward-looking costs. Accordingly, the Bureau is focusing on technologies and designs that, together, would align the modeled costs as closely as possible with the forward-looking costs of the wireline providers who have a statewide option to accept or decline support.[22]

a. Background

15. Several interdependent issues need to be resolved regarding network technology, design, and valuation: (1) how much of the network the model assumes to pre-exist, (2) whether the model assumes the connection to the customer location is wholly fiber or some mixture of fiber and copper wire, and (3) how the model should calculate the value of the network at the end of the modeling period.

(i) Network Design: Green-field vs. Brown-field

16. The first issue is the amount of the modeled network that the model assumes will be newly built. Because the two approaches to resolving this embedded issue are aligned with either the green-field or brown-field approach, this Notice discusses the issues together.

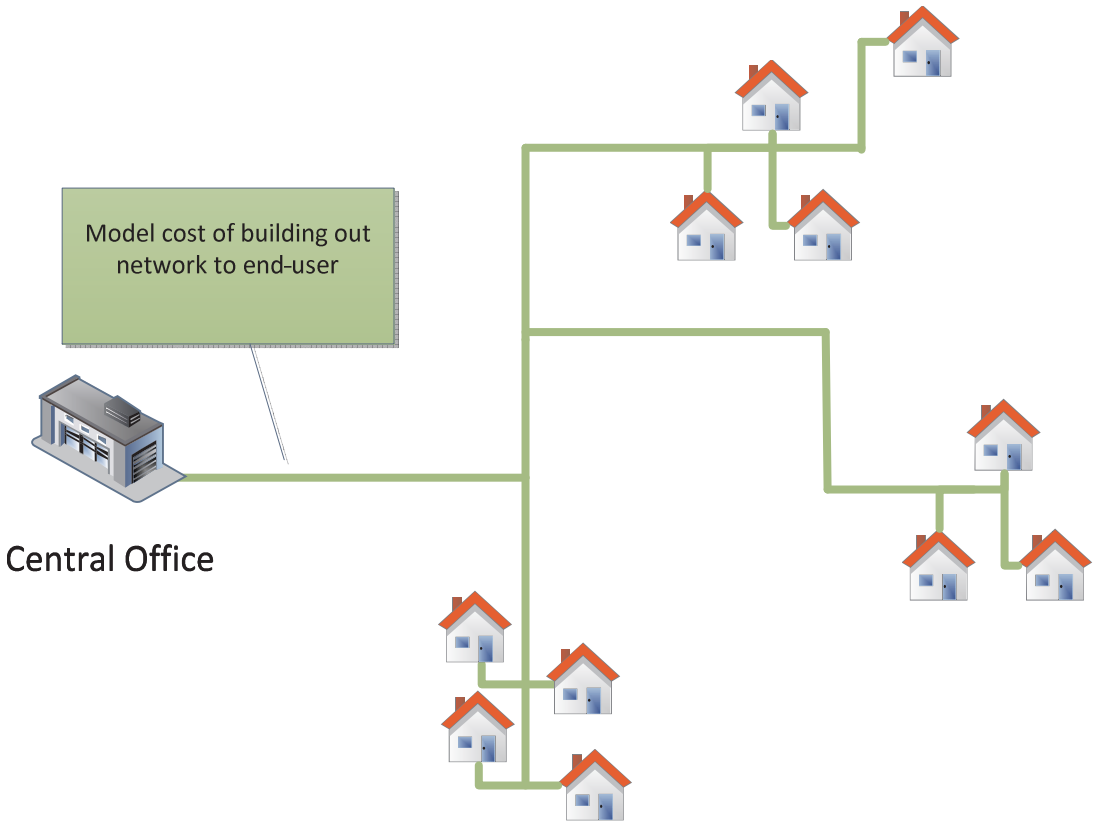
17. One approach ("green-field") is to model costs assuming that the entire network, from the local central office to each end-user location, is newly built. As illustrated in Figure 1 below, the network (shown in green) is assumed to be built in its entirety, typically along roads or other rights of way. A green-field model may retain central offices in their existing locations and hold wire center boundaries constant ("scorched node"). This is the approach taken in the ABC Coalition model.

[20] *Id.* at 17726-27, paras. 160-63. Similarly, the model will make assumptions about efficient routing for deploying outside plant; there is no requirement that providers will follow the routes modeled.

[21] *Id.* at 17696, para 91 ("Funding recipients may use any wireline, wireless, terrestrial, or satellite technology, or a combination of technologies, to deliver service that satisfies this requirement.").

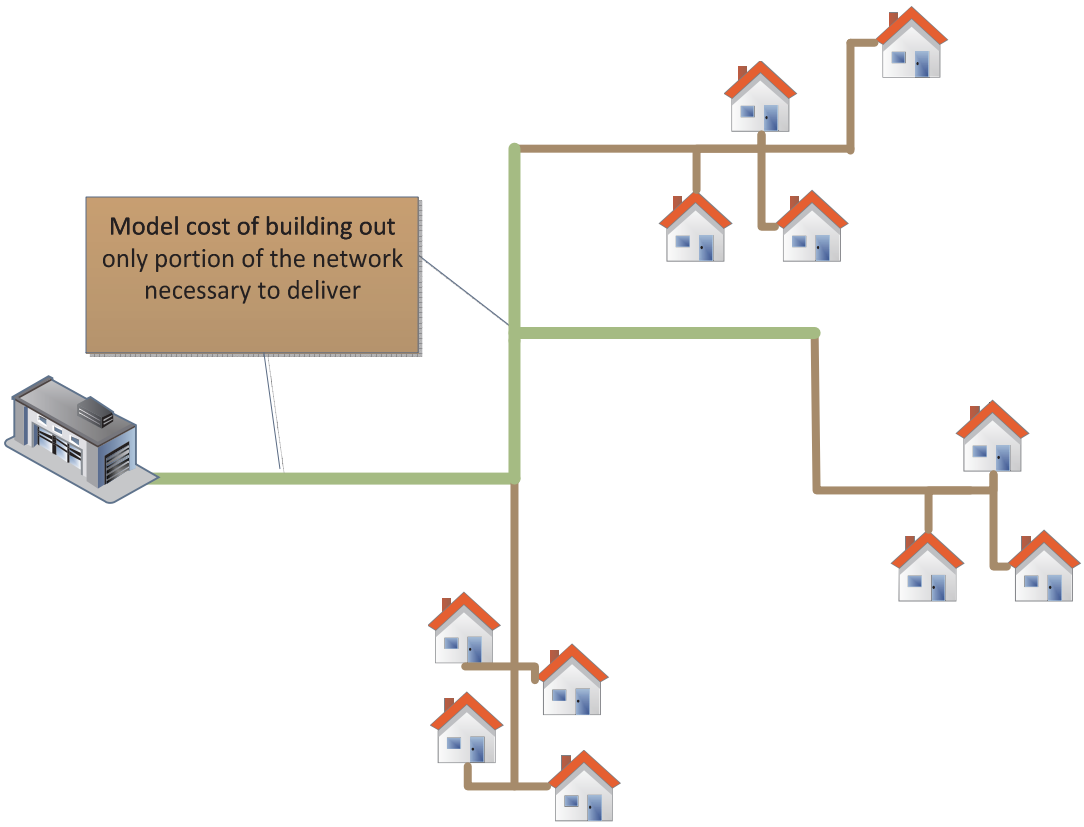
[22] *Id.* at 17729-32, 17736-37, paras. 171-78, 189-91.

Figure 1: Green-field build



18. Another approach ("brown-field") is to assume that only a part of the network will be built, and to therefore model only the costs associated with those network upgrades. This approach relies on existing assets as part of the modeled network. As illustrated in Figure 2 below, some parts of the network (shown in brown) are upgraded as necessary to achieve the necessary levels of connectivity. Other existing network assets (shown in a thinner blue line), typically twisted-pair copper, are retained because, with the other upgrades, they provide sufficient connectivity.

Figure 2: Brown-field build



(ii) Network Design: FTTP vs. DSL or FTTN

19. The second issue is whether the Bureau should model the costs associated with fiber-to-the-premises (FTTP) technology, or with technology that relies in part on twisted-pair copper like digital subscriber line (DSL) or fiber to the node (FTTN). The choice of what technology to model does not obligate providers to deploy that technology.[23] The requirements laid out in the *USF/ICC Transformation Order* focus on the services delivered, not the technology used.[24]

20. A schematic example of FTTP is shown below in Figure 3. As the name suggests, fiber optic cables are run from the central office to each end-user location. This example assumes the use of a Passive Optical Network (PON) for modeling purposes, placing passive splitters throughout the network. There are other approaches to FTTP, including architectures where each end-user location has a dedicated fiber connected back to the central office, or where there are active electronics in the field.[25] Given that companies deploying FTTP today typically rely on PON architectures, however, the Bureau believes it is

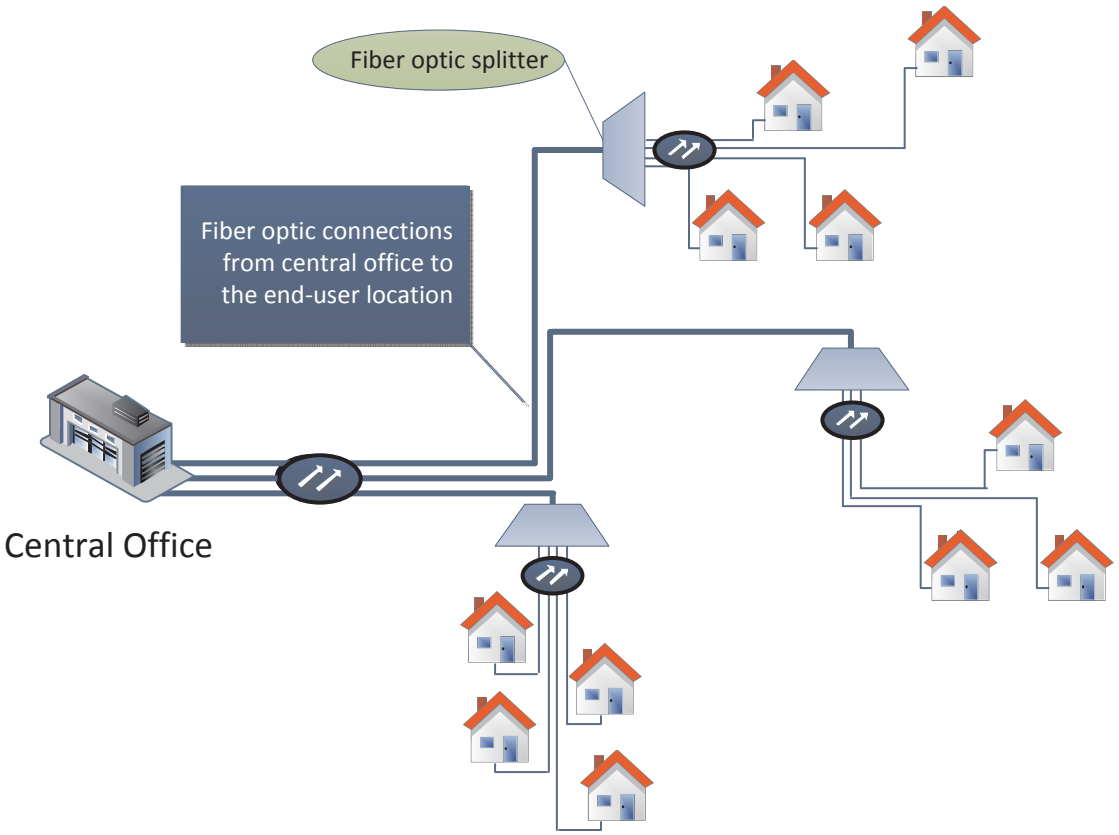
[23] Similarly, the model will make assumptions about efficient routing for deploying outside plant; there is no requirement that providers will follow the routes modeled.

[24] *USF/ICC Transformation Order*, 26 FCC Rcd at 17696, para. 91.

[25] One could also deploy an approach called RF over Glass (RFoG) more typically deployed by cable operators.

appropriate to limit the model's approach to PON.[26] Commenters who believe other architectures are appropriate, or who wish to advocate for a particular PON architecture are encouraged to explain the specific basis for their position.

Figure 3: PON network



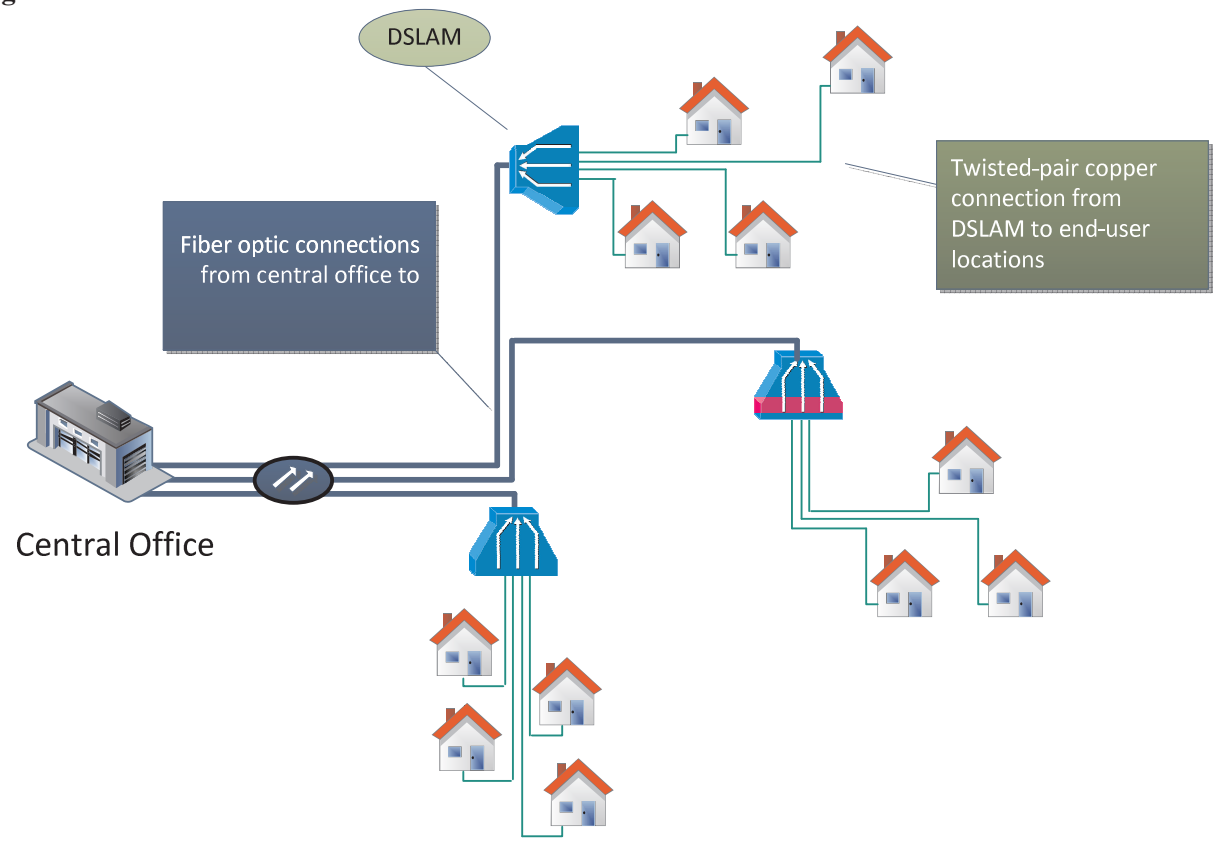
21. A schematic for a DSL network that relies on the twisted-pair copper infrastructure is shown below in Figure 4.[27] Fiber-optic connections are shown in blue; twisted-pair copper in a lighter green line. DSL Access Multiplexers (DSLAMs) are placed so that the longest copper loop between the DSLAM and end-user location is shorter than some maximum length like 5,000 or 12,000 feet, as necessary to achieve the modeled level of connectivity. As shown, these DSLAMs are presumed to be

[26] As of 1Q2011, Verizon FiOS represented the majority of homes passed by FTTP deployments (see, e.g., http://newscenter.verizon.com/kit/fios-symmetrical-internet-service/all-about-fios.html last accessed Feb 24, 2012 showing FiOS passing 15.8 million premises; and http://s.ftthcouncil.org/files/bbp_marapr_primer_-_2011.pdf at 16, showing a total of 20.9 million passed by FTTP). Verizon has been deploying ITU-T G.984 PON (GPON) since at least 2008 (see, e.g., http://newscenter.verizon.com/press-releases/verizon/2008/verizon-extends-industry-lead-1.html last accessed Feb 24, 2012).

[27] For simplicity this Notice will describe this as a DSL network, though the Bureau realizes that deployments with shorter loops are often called FTTN networks.

connected to the central office by fiber optic cable.[28] The ABC Coalition model estimates the cost of a DSL network.

Figure 4: DSL network



(iii) Terminal Value: Book value vs. Economic Value vs. Zero Value

22. The third issue is how the model should calculate the terminal value of the network at the end of the modeling period.

23. Some network assets are particularly long-lived, with accounting lifetimes of 20 or more years, and economic lifetimes that are even longer (i.e., these assets can continue to operate and provide value even after they are fully depreciated, and their book value is zero). Depending on the type of network, these long-lived assets may represent a significant fraction of the total cost of deployment.

24. The *USF/ICC Transformation Order* provides that price cap carriers accepting a state-level commitment will receive funding for five years.[29] At the end of the five-year term, the *USF/ICC Transformation Order* contemplates a market-based mechanism will be used to set support going

[28] DSLAMs can be fed by copper as well, at least if the aggregate demand on the DSLAM is low enough and the DSLAM is close enough to the central office. For simplicity, the Bureau proposes to assume that all DSLAMs are fiber fed. Those who believe this is an inappropriate assumption should note that in their comments.

[29] *See USF/ICC Transformation Order*, 26 FCC Rcd at 17729-30, para. 172.

forward. Thus, recipients of model-based support over the next five years may continue to receive support, or a competitor may receive support instead. On the other hand, if a market-based mechanism is not implemented by the end of the five-year period, ETCs accepting the state-level commitment "will be required to continue providing broadband … in exchange for ongoing CAF Phase II [model-determined] support."[30]

25. The extent to which the model includes costs that reflect the value of longer-lived assets is likely to be a large driver of support amounts. A green-field FTTP deployment would likely have significant commercial value after five years, even in high-cost areas, given that it scales more readily to higher-speed services than DSL and would have many years of depreciable life (and possibly even more actual) remaining. The commercial value and remaining life of a brown-field DSL deployment is less clear.

26. **Book value.** The model would determine the residual value of the network by the book value of the assets at end of the modeling period. This is a regulatory accounting calculation that the Bureau expects would be relatively simple to implement. Book value may overstate the terminal value, however, if there is a lack of a business case for continuing to provide service without ongoing support.[31] The ABC Coalition model adopts the approach of using book value as the residual network value.

27. **Commercial (or economic) value**. The model would determine the residual value of the network by the value the business can generate (profitability) at end of the modeling period. This approach best reflects the ability of the network to generate profit from end-user revenue against ongoing costs at the end of the five-year period. It may be difficult, however, to forecast revenue and profit, especially if it is unknown whether the carrier will continue to receive support after five years. If, for example, a competitor won support for that area under a subsequent market-based mechanism, the model-support recipient's market share and revenue could fall.[32]

28. **Zero value.** Under this approach, the model would assume zero value of assets at the end of the modeling period, either through an assumption that the assets have zero revenue-producing ability or an assumption of accelerated five-year depreciable life for all assets. This would provide certainty for the carriers that they would not be left with unrecovered investment when CAF Phase II ends. However, the approach may create a significant excess support for carriers if they are able to generate revenue on assets at the end of the modeling period or if modeled support continues beyond the expected five-year period.

b. Discussion

29. The decisions regarding network technology, design, and terminal value together define a possible model approach. As discussed below, the Bureau proposes two approaches: green-field FTTP paired with book value; or brown-field DSL paired with zero value. The Bureau also seeks comment on

[30] *Id.* at 17726-27, para.163.

[31] Conversely, it is possible, though perhaps unlikely in the high-cost areas that would receive support pursuant to CAF Phase II, that book value could understate commercial value when CAF Phase II ends.

[32] It may also be inconsistent to use revenue and profit to determine residual value of the network if revenue is not used to set cost thresholds for determining support under the model.

the ABC Coalition's proposal to use a green-field DSL model.[33] The Bureau seeks public input on its analysis as set forth below.

30. To the extent that parties support alternative model designs not discussed here, including other variants of networks that use both fiber- and copper-based connections, such as hybrid-fiber coax (HFC) networks, the Bureau asks that the parties use their comments to justify those alternatives. The parties should address how their favored alternatives meet the criteria set forth above -- precision, accuracy, simplicity, accessibility, administrative feasibility, and the cost of implementation -- as well as any other criteria the parties believe relevant to the choice of model designs.[34]

31. **Green-field FTTP paired with Book Value.** Under this proposal, the Bureau would model the costs of a wholly new FTTP network, with fiber connectivity to the end user.[35] The primary advantage of a green-field FTTP model is that it would calculate the forward-looking, total long-run incremental cost of an efficient provider. This would be consistent with prior modeling efforts and the *USFICC Transformation Order and FNPRM*.[36] The operating costs of a green-field FTTP network are likely lower than for networks with active electronics in the outside plant, such as DSL networks.

32. However, a green-field FTTP model would also make annual cost and support levels highly dependent on the terminal value, because the explicit modeling period is much shorter than the lifetime of many of the assets in the model.[37] Given the degree of uncertainty associated with estimating commercial value, it may be inappropriate to use commercial value to determine the terminal value. However, because the commercial value is likely to be significant, using zero terminal value with the green-field FTTP approach would likely provide an excessive benefit. The Bureau therefore proposes to use book value as the terminal value, if a green-field FTTP approach is adopted.

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[33] ABC Plan, Attach. 3 (Model Description). The ABC Coalition's updated CQBAT filing permits modeling and testing of FTTP networks. CQBAT Letter. Because the Bureau does not propose to adopt the Green-field DSL approach, the Bureau does not address how it might be paired with a particular terminal value approach. If commenters support greenfield DSL, they should also discuss which terminal value approach is appropriate and why. In addition, the Bureau does not include a discussion of brown-field FTTP because it does not believe there are existing fiber connections to end-user locations in the areas of interest. Finally, the Bureau believes it unlikely that it can find a reliable source of data indicating where such fiber exists. Commenters who believe that a brown-field FTTP model is appropriate should describe what assets currently exist and what data source the Bureau should use to capture those assets.

[34] *See supra* para. 11.

[35] As discussed above, this approach also would include costs (and calculate support) for high-cost areas that are already served. *See supra* para. 17.

[36] *See USF/ICC Transformation Order*, 26 FCC Rcd at 17734-35, para. 184 (agreeing that a forward-looking model should be used to estimate costs for CAF Phase II). When the Commission adopted criteria to guide the development of its existing narrowband cost model, it required that "[o]nly long-run forward-looking economic cost may be included. The long-run period must be a period long enough that all costs may be treated as variable and avoidable." *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report and Order, 12 FCC Rcd 8776, 8912-13, para. 250 (1997) (criterion 3) (*Universal Service First Report and Order*). By "efficient provider", the Bureau means one that deploys a network that provides speed and capacity that scale easily and which provides the greatest potential for end-user revenue, including data, voice and video over the long-run. As discussed above, providers may choose to deploy other technologies. *See supra* para. 13.

[37] *See, e.g.*, *USF/ICC Transformation Order*, 26 FCC Rcd at 17729-30, para. 172.

33. A green-field FTTP approach may have drawbacks as well. Relative to a brown-field model, a green-field model using any technology is likely to calculate higher costs and require higher support levels per location (i.e., fewer locations covered for a fixed sum of funding). A green-field FTTP model in particular is not likely to represent providers' actual expenditures to provide broadband over the five-year modeling period. Specifically, it would provide support for construction of parts of the existing network that are unlikely to be replaced during the modeling period.[38] In addition, the green-field FTTP approach ignores the cost savings that some providers may achieve by shortening loops only as customer demand requires, or the additional revenues that some providers may achieve by deploying a wireless network from which they can derive both fixed and mobile revenue. The Bureau seeks comment on this analysis.

34. **Brown-field DSL paired with Zero Value.** The second proposal is to model the cost of a network upgrade, shortening loops to a maximum of, for example, 12,000 or 5,000 feet, relying on the existing copper plant for the last several thousand feet of connectivity. The choice of maximum loop length is a major driver of cost and connectivity because shorter loops will provide higher speeds at greater costs. A brown-field DSL model is most likely consistent with providers' actual costs (at least for those providers who deploy DSL)[39] and aligns modeled costs with demand (i.e., loops can be shortened, and costs incurred, only as demand warrants).

35. There are likely to be disadvantages associated with a brown-field DSL approach, however. The ability of a given loop length to deliver desired speed depends on age and quality of existing plant, and on the gauge of the copper wires. It is unclear if the necessary data for existing copper deployments are available. As a result, the brown-field approach may require modeling existing networks and assets or making sweeping generalizations about average conditions. In addition, increasing offered broadband speed (e.g., if the Commission increases the minimum requirement) in the future will require additional investment, and presumably additional support. In addition, the brown-field approach ignores sunk costs associated with the existing plant (part of total cost of building, operating and maintaining in a given area), and so arguably will not provide sufficient funds to meet universal service goals over the long run.[40] Finally, a DSL approach is likely to have higher operating cost than FTTP (though these higher costs may be small relative to excluded sunk costs).

36. The Bureau also notes that the use of a brown-field model makes the availability of some data sets more important (e.g. age and gauge of copper plant, location of existing fiber) because the cost of a brown-field deployment cannot be reasonably estimated without them.[41] A lack of reliable data sets to address these needs would undermine the development of a brown-field model.

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[38] Whether a provider chooses to replace its existing network with FTTP or to more narrowly upgrade its existing network will depend on local conditions and the provider's long-term strategy.

[39] *See* Letter from Jonathan Banks, USTelecom, to Marlene Dortch, FCC, Secretary, WC Docket No. 10-90 et al. (filed Oct. 17, 2011) (USTelecom Oct. 17 Ex Parte Letter) ("The ABC Coalition modeled a fiber-to-the-DSLAM (FTTd) build based on the assumption that such a build would represent the most efficient use of existing network facilities combined with incremental investments where needed to support the level of service proposed by the ABC Plan.").

[40] The long run is a time period when all costs are or may be treated as variable and avoidable. *Universal Service First Report and Order*, 12 FCC Rcd at 8913, para. 250. Because the mandate for the CAF Phase II is five years, it is unclear whether the long run is an appropriate time over which to evaluate.

[41] *See infra* paras. 94-105.

37. The brown-field DSL model also would need to capture costs associated with exhaust of capacity in existing aggregation facilities that is driven by the addition of new served locations. Although the brown-field DSL approach likely results in lower costs and support per location, this is dependent on terminal value calculation. Under the brown-field DSL approach, the Bureau proposes that the model would assume that, at the end of the modeling period, assets would have zero value. A DSL network with only limited upgrades could have small commercial value, especially if another service provider receives support under a program subsequent to CAF Phase II, but estimating actual commercial value is difficult and uncertain. For that reason, using a terminal value of zero could reasonably approximate the value of the network without the added complexity of estimating commercial value. This approach would ensure that calculated costs reflect the entire cost of network upgrades, including possible impairment of value in an unfavorable commercial environment. The Bureau seeks comment on this analysis.

38. **Green-field DSL.** Under this approach, the Bureau would model the cost of a wholly new network where the last several thousand feet of the connection is provided by newly installed twisted-pair copper. The green-field DSL approach calculates the total long-run incremental cost, in most locations, of the current telephone and broadband network. This is the approach initially proposed by the ABC Coalition.[42]

39. There appear to be significant disadvantages of a green-field DSL approach. First, it is only forward looking from the perspective of decisions made a decade or more in the past – i.e., DSL does not currently represent the most efficient, forward-looking choice of technology. Second, relative to a green-field FTTP approach, a green-field DSL approach is less efficient because it has higher expected operating expenses and is more likely to require significant additional investment to make faster broadband offerings available. It also may not be representative of providers' actual investment to provide broadband over the five-year modeling period (in other words, it would likely provide support for construction of parts of existing network that are unlikely to be replaced during the modeling period). As a result, this approach may not represent either forward-looking costs nor the costs providers are likely to actually incur. In addition, given these concerns, a green-field DSL approach may have an especially high error rate with respect to identifying the highest cost areas for the purpose of the Remote Areas Fund.[43]

2. Should the model estimate the total costs of serving the entire service area (and allocate shared costs to supported areas) or only the standalone costs of areas eligible for support?

40. The Commission concluded in the *USF/ICC Transformation Order* that it would use a forward-looking model capable of determining "on a census block or smaller basis, areas that will be eligible for CAF Phase II support."[44] Specifically, the Commission "will use the model to identify those census blocks where the cost of service is likely to be higher than can be supported through reasonable end-user rates alone" and "identify, from among these, a small number of extremely high-cost census blocks that should receive funding specifically set aside for remote and extremely high-cost areas" (i.e.,

[42] *See* ABC Plan, Attach. 3 (Model Description); *see also* USTelecom Oct. 17 Ex Parte Letter.

[43] As noted below, identification of areas subject to the RAF could affect the obligations of rate-of-return carriers. *See infra* note 60.

[44] *USF/ICC Transformation Order*, 26 FCC Rcd at 17728, para. 167.

the Remote Areas Fund).[45] The Commission also concluded that "it would be appropriate to exclude any area serviced by an unsubsidized competitor that meets our initial performance requirements."[46]

41. Most costs in a network are shared costs. For example, feeder cabling is shared among all end-users served by that feeder; even cabling in the distribution plant is often shared among multiple end user locations. The method used to attribute the costs of shared plant to individual end users or to census block or smaller areas will affect the relative cost of serving different areas.

42. The Bureau thus must determine how to estimate network costs consistent with the requirement in the *USF/ICC Transformation Order* that support will only be provided in areas outside the footprint of an unsubsidized competitor.[47] As proposed in the ABC Coalition model, the Bureau proposes to use a method in which the model would calculate the costs of a network that serves the entire service territory area and then allocate the shared costs between eligible and ineligible areas.

a. Background

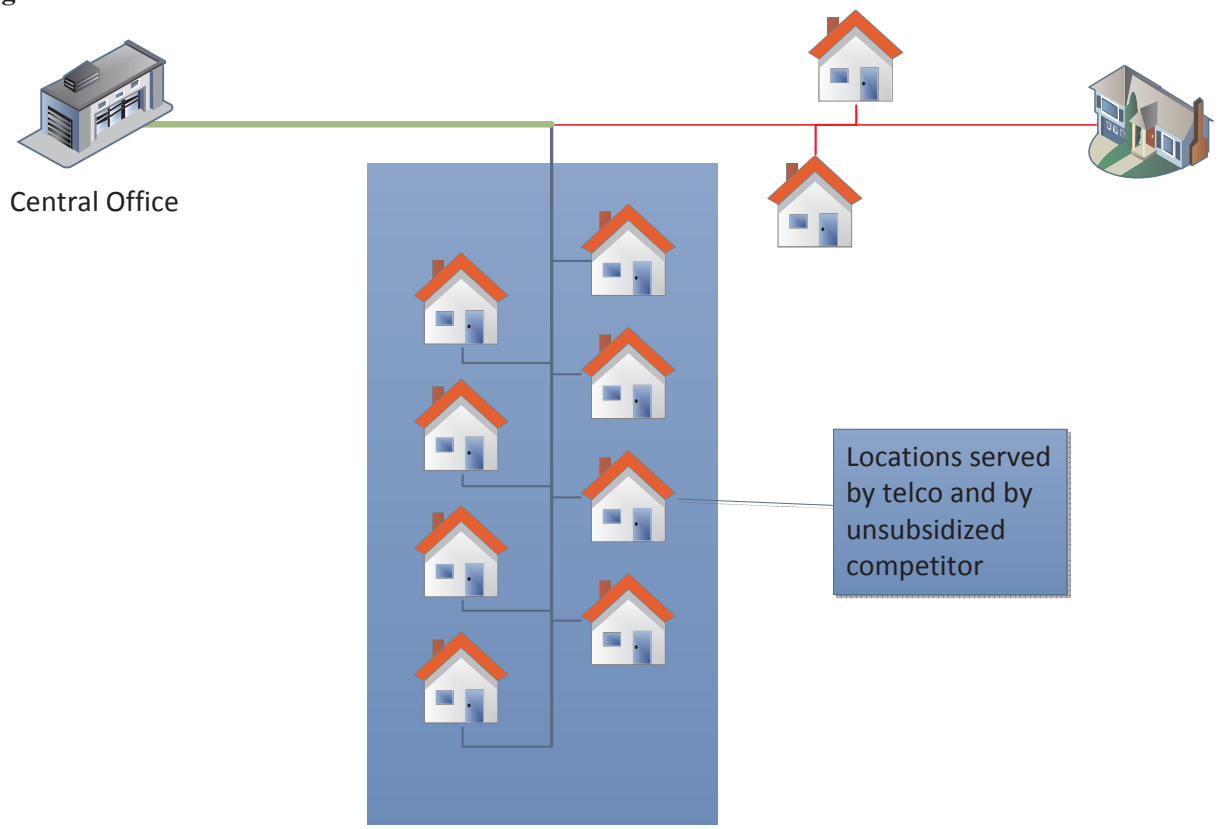
43. Figure 5 illustrates this issue with simplifying assumptions. In a given area served by a single central office, most of the homes served are clustered together in a small area (shown in blue). These homes are served by an unsubsidized cable company and are in a census block (or smaller area) that is ineligible for CAF support. Three remaining homes are in a different census block (shown outside the blue area) outside the footprint of the unsubsidized competitor. Only these three homes are in an area that is eligible for support.

[45] *Id.*

[46] *Id.* at para. 170.

[47] *Id.* However the total cost of the network is calculated, it may be appropriate to exclude the highest-cost areas that will be shifted into the Remote Areas Fund (RAF). As noted in the National Broadband Plan a small number of the most expensive locations drive a disproportionate share of cost. Federal Communications Commission, *Connecting America: The National Broadband Plan*, at 138, exh. 8-C (rel. Mar. 16, 2010) (National Broadband Plan).

Figure 5: Areas in which to model costs



44. **Model Entire Network.** One approach to modeling the cost of the area eligible for support (the three homes) is to calculate the cost of the entire network shown, including those areas in the footprint of the subsidized competitor, and then determine the share of costs for the eligible and ineligible areas in a later step. In this approach, parts of the network (shown in green) serve both the eligible and ineligible areas and the associated costs will be shared in some way between the eight homes shown in the blue area, and the three homes outside the blue area, which are in an area eligible for support. The costs associated with network infrastructure serving only ineligible areas (shown in blue) are excluded entirely from the analysis, and the costs associated with network plant serving only eligible areas (shown in red) are included entirely. This approach assumes that any service provided by carriers in areas ineligible for support will continue. The specific method for determining the share of costs for network facilities that serve both eligible and ineligible areas is essential to this approach, and is discussed immediately below.[48]

45. **Standalone Cost of Serving Eligible Areas.** An alternative approach would be to model only the network needed to connect the locations in eligible areas (in Figure 5, the three homes outside the blue area). In the example above, this approach means modeling only the parts of the network (shown in red and green) that serve supported areas, whether they would otherwise be shared with unsupported areas or not, which has the effect of attributing a greater amount of costs to the eligible areas.[49]

[48] *See infra* paras. 49-59.

[49] The model would still need to allocate costs among eligible areas, as discussed below. *See infra* paras. 49-59. As a result, there may still be significant variation in the cost to serve those locations, resulting in different support (continued…)

b. Discussion

46. Modeling the costs associated with a complete network (i.e., including both eligible and ineligible areas) and then assigning shared costs between the eligible and ineligible areas appears to have significant benefits. First, it more accurately depicts an economically efficient network and provider. In an economically efficient network, buildout would cover all or most locations in a given area, rather than only serving a small subset of locations that lack broadband. This is particularly true in areas where building out the network to the unserved could enable very low cost service to homes served by a competitive provider, as in the illustration above. An economically efficient provider would not generally cede a large fraction of customers to competition.

47. Second, in the *USF/ICC Transformation Order,* the Commission "weigh[ed] the fact that incumbent LECs generally continue to have carrier of last resort obligations for voice services."[50] Modeling the entire network would be consistent with these obligations and the treatment of incumbent price cap carriers. In addition, this approach will generally lead to lower per-location costs and therefore lower per-location support levels in areas that receive support, which, depending on how the low- and high-end cost thresholds are set for CAF Phase II,[51] may maximize the number of locations that would be supported pursuant to CAF Phase II. In contrast, the primary advantage of modeling the standalone cost of serving eligible areas is that the cost of serving eligible areas is not dependent on maintaining service to locations in ineligible areas.

48. For these reasons, the Bureau proposes to model the entire network and assign shared costs between eligible and ineligible areas to determine support amounts. The Bureau seeks comment on this proposal and on its analysis of the relative attributes of each alternative.

3. What specific methodology should be used to assign shared costs?

a. Background

49. A related question is how to allocate costs consistent with the requirement in the *USF/ICC Transformation Order* that the model be capable of determining "on a census block or smaller basis, areas that will be eligible for CAF Phase II support."[52]

50. **Subtractive method.** Under the first approach, the model would estimate only those costs needed to serve supported areas that are over and above the costs that would be required to serve unsupported areas – i.e., the marginal or incremental costs of the supported areas. The Bureau would calculate these costs by comparing the cost of networks modeled with and without those areas. Specifically, the model would estimate the cost of a network serving both supported and unsupported

(Continued from previous page)
levels, including some eligible locations that receive no support due to low costs or inclusion in the Remote Areas Fund due to very high costs.

[50] *USF/ICC Transformation Order*, 26 FCC Rcd at 17730-31, para. 175.

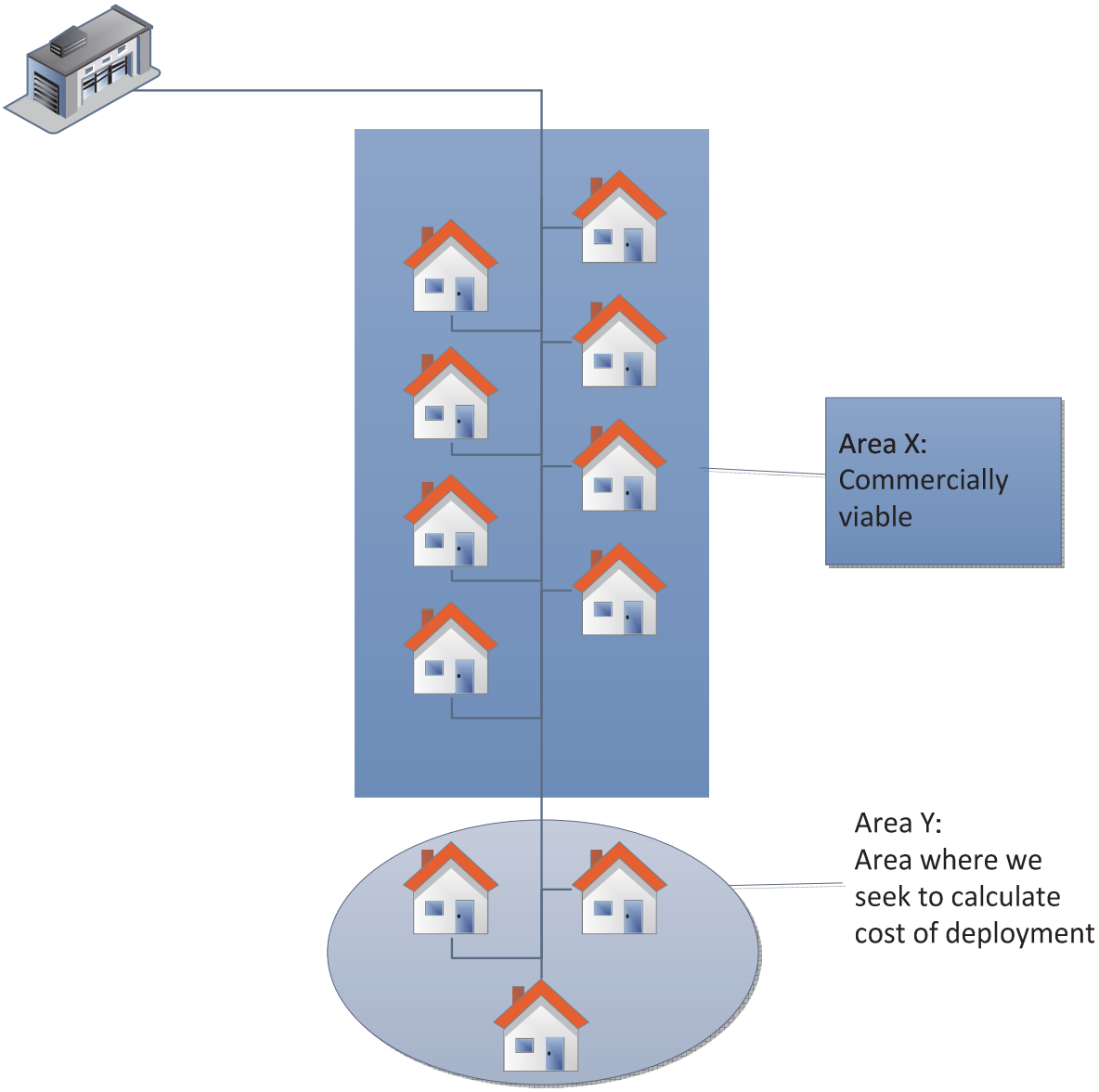
[51] *See infra* paras. 64-71.

[52] *USF/ICC Transformation Order*, 26 FCC Rcd at 17728, para. 167.

areas and then subtract the cost of a network serving only the unsuppored areas to determine the costs associated with the supported areas.

51. Figure 6 illustrates how this calculation would be performed. It illustrates a service area that includes two areas, X and Y. Area X (shown in blue) represents an area (i.e. a census block) that is commercially viable for the carrier and for which the carrier will not receive support. Area Y (shown in light blue) is a high-cost area (i.e. a different census block) for which costs must be estimated. By calculating the cost of a network serving the entire area (cost (X+Y)) and then subtracting the cost of serving area X (cost (X)), the model would estimate costs associated solely with serving area Y, i.e., the incremental cost of serving area Y. The cost of serving area Y may include the incremental cost associated with upgrading to larger-capacity feeder links within area X; but would *not* include any costs incurred in area X necessary to serve customers in area X if area Y is not served.

Figure 6: modeling cost of an additional area



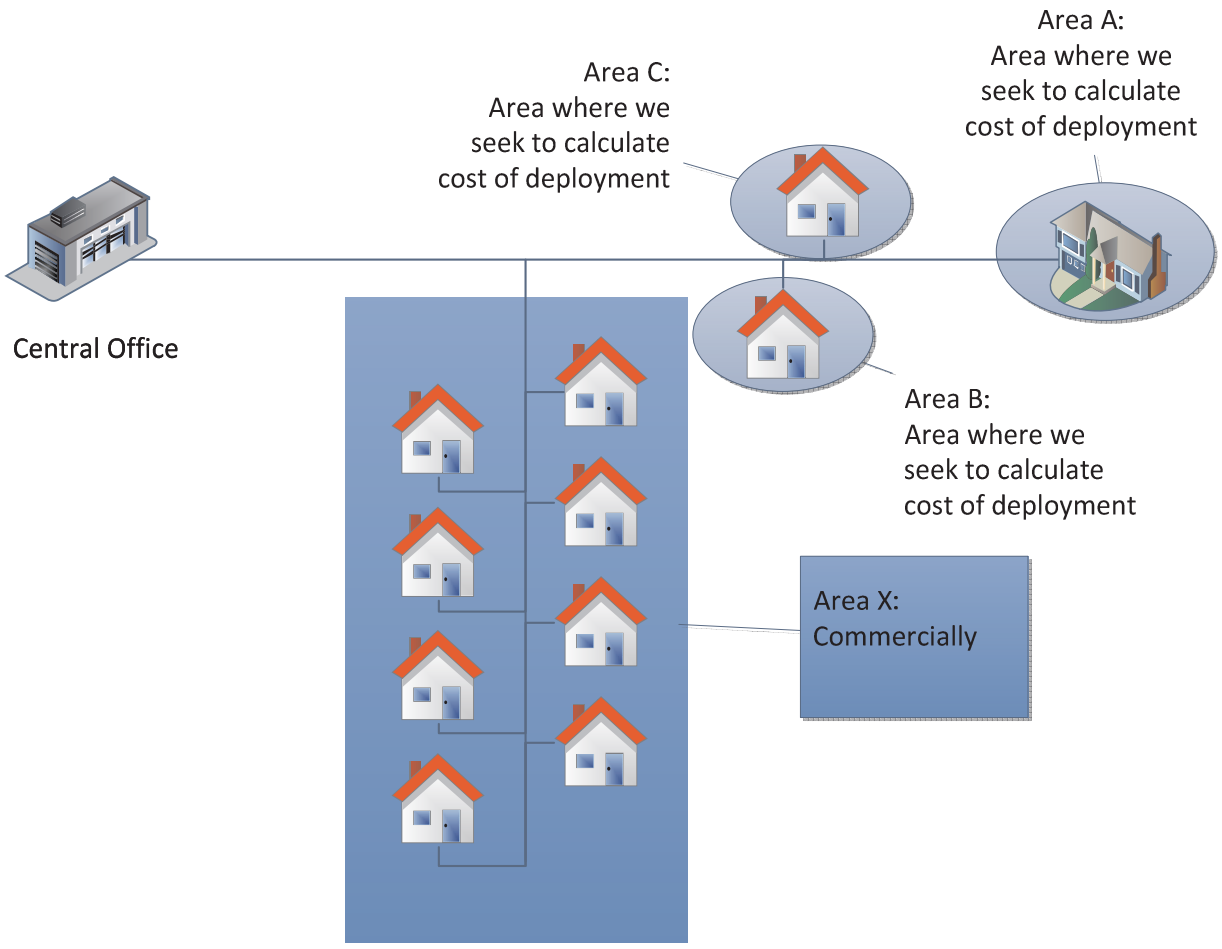
52. Two related issues complicate this scenario. The Bureau needs to 1) determine how to maximize the number of locations served with the $1.8 billion budget, and 2) determine the threshold for which locations will be served by the Remote Areas Fund designed to ensure service to the most costly locations.[53] As a result, the model needs to determine not just the cost of a single incremental addition to the network, but the cost of building out many areas – when the cost of each area can affect the cost of the others.

[53] *See ABC Plan*, Attach. 1 (Framework), at 4-5; *USF/ICC Transformation Order*, 26 FCC Rcd at 17728-29, paras. 167-169, 17837-39, paras. 533-38.

53. A slightly more complicated example, illustrated in Figure 7 below, highlights the challenges associated with such a calculation. In addition to the commercially viable Area X, there are three areas that are eligible for support: A, B and C. In this simplified example, those three areas hold individual homes, but they could also be groups of homes.

54. The cost of serving each of these areas depends in part on whether the other areas are served. For example, if a provider builds network to area A, then the cost for building to areas B and C could be lower; similarly if network is built to area B, the cost to serve area C could be lower. Determining the cost of building each area then depends on what other areas eventually get service. Therefore a model would need to calculate cost (X), cost (X+A), cost (X+B), cost (X+C), cost (X+A+B), cost (X+A+C), cost (X+B+C) and cost (X+A+B+C). After the Bureau determines which areas are to be included (i.e., which areas are eligible for support instead of being moved into the Remote Area Fund), then calculating the incremental costs of those areas would be straightforward. Note that this method effectively averages the costs of areas are included: In the above example, determining the cost (A+B) by calculating the cost (X+A+B) and subtracting cost (X) averages the cost of areas A and B together.

Figure 7: Modeling cost of multiple additional areas



55. The subtraction methodology may be a computationally difficult method of allocating costs. There are hundreds of thousands of unserved census blocks in the country, meaning a multiple of that many permutations; this, in turn, will require many more model runs than an allocation approach.[54] In addition, the approach presumes the Bureau has determined which areas are sufficiently low cost so as not to qualify for support (area X in the example above). It also may be difficult to determine the subsidy required to maintain services in areas that require support (*i.e.*, areas that would be unserved but for existing high-cost support). It will also be necessary to determine which areas are extremely high-cost for Remote Areas Fund purposes using only this methodology (i.e., there may need to be a way to determine which areas to exclude before calculating costs).[55]

56. **Pro Rata or Formula method.** Costs could be allocated to various areas within a service area on a pro rata basis or using some other formula. For example, one could allocate costs based on the number of end-user locations, the amount of bandwidth throughput (typically in Mbps) each user is assumed to buy, or the amount of bandwidth each user is assumed to consume (typically in GB per month). This method is consistent with the current FCC High-Cost Proxy Model, the model submitted by the ABC Coalition and the National Broadband Plan modeling.[56]

b. Discussion

57. The Bureau proposes to use a subtractive approach, provided that a computationally tractable method can be found, because the subtractive approach ensures that only the costs that would not otherwise be incurred are attributed to each area, which the Bureau believes provides the best estimate of the economic costs of serving an area. The Bureau seeks comment on this proposal.

58. The main advantage of the pro-rata or other formula approach is that it involves straightforward calculations without the computational complexity of the subtraction approach. However, a pro-rata or other formula-based approach may not estimate the economic costs of serving any area with a high degree of accuracy. Moreover, it may not capture that an area is commercially viable without a subsidy (e.g., where there is a large institutional customer for whom fiber would be run into a neighborhood in any circumstance).

59. The Bureau seeks comment on its proposal and analysis of alternatives. With respect to the pro rata or formula approach, the Bureau seeks comment on which formula or method of allocating costs could or should be used and the advantages or disadvantages of each.

4. Should the model calculate support levels for locations already served?

60. High-cost areas are likely to include a mix of both served and unserved locations. Some locations in areas with high long-run incremental costs may already have broadband because they had

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[54] *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act*, GN Docket No. 10-159, Seventh Broadband Progress Report and Order on Reconsideration, 26 FCC Rcd 8008, 8022, para. 23 (2011) (*2011 Seventh Broadband Progress Report*).

[55] *USF/ICC Transformation Order*, 26 FCC Rcd at 17728, para. 167.

[56] *See* ABC Plan, Attach. 3 (Model Description); National Broadband Plan, Broadband Assessment Model at 9, 11, Attach. 6 at 11, Attach 7 at 2.

previously been subject to other forms of regulation (such as rate-of-return regulation) that compensated carriers' costs on a different basis, because they had received legacy high-cost support, or because the existence of commercially viable service areas nearby reduced the incremental cost of providing broadband such that there was a business case to invest. Should the model include and calculate support for high-cost areas that are already served?

a. Background

61. **Include existing areas.** Under this approach, areas that meet a certain cost threshold would receive support regardless of existing broadband deployment. Otherwise, some carriers might be worse off for having aggressively deployed broadband service, perhaps using legacy high-cost support, prior to the implementation of CAF Phase II. Including areas already served with broadband is consistent with the green-field modeling approach because the green-field approach models an efficient deployment without presuming the existence of any facilities, meaning that it would be logically inconsistent to assume that some areas already have service. It may be more difficult under a brown-field model to implement an approach that supports areas with existing broadband deployment. Ongoing support may be required to ensure continued service – the areas may have been previously supported by legacy high-cost support mechanisms or deployment may have occurred despite high costs – but the incremental cost to deploy broadband to areas that already have service will likely be too small to generate support under the model.[57]

62. **Exclude existing areas.** Under this approach, costs would be included and support provided only to areas that do not already have broadband that meets the broadband public interest obligations. This would allow targeting of support to completely unserved areas and would not support providers that may have deployed to certain high-cost areas for which unsubsidized business cases may exist. It would also exclude, however, areas to which broadband deployment was made possible only by legacy high-cost support. This approach may be more consistent with a brown-field modeling approach because of its focus on the additional costs associated with network upgrades. It is not completely inconsistent with a green-field approach but, as noted, presumably would not ensure sufficient ongoing support for service whose costs exceed end-user revenues.

b. Discussion

63. The Bureau proposes to include areas that already are served by broadband in cost and support calculations. The Bureau seeks comment on its analysis on this issue.

5. What benchmarks should be used to identify areas with costs too low or high to receive support pursuant to CAF Phase II?

a. Background

64. In the *USF/ICC Transformation Order*, the Commission established that the model would be used to determine what areas would be eligible to receive support based on the costs of serving them. Specifically, the Commission adopted a methodology "that will target support to areas that exceed a

[57] Even a brown-field model may estimate some small amount of incremental costs for areas already served with broadband. For example, the model could assign costs associated with the augmentation of backhaul or other shared costs to the served area.

specified cost benchmark, but not provide support for areas that exceed an 'extremely high cost' threshold."[58] Support for each census block will be the amount the modeled cost exceeds the cost benchmark, provided that the census block's cost does not exceed the "extremely high cost" threshold.[59] The Bureau seeks comment on how to establish both the cost benchmark above which a high-cost area will be eligible for support and the extremely high-cost threshold, above which an area will be ineligible for support through CAF Phase II and will instead be eligible for support through the Remote Areas Fund (RAF).[60] Given the fixed $1.8 billion ceiling for CAF Phase II, it is necessary that these benchmarks be established at levels coordinated to provide no more than the available amount of support.[61]

65. With regard to the cost benchmark, the Commission stated that it would use the model "to identify those census blocks where the cost of service is likely to be higher than can be supported through reasonable end-user rates alone." [62] The ABC plan proponents proposed a benchmark of $80 per loop per month.[63]

66. With regard to the RAF threshold, the Commission also concluded that "a small number of extremely high-cost census blocks that should receive funding specifically set aside for remote and extremely high-cost areas . . . rather than receiving CAF Phase II support."[64] The Commission found that excluding these extremely high-cost areas was consistent with its "recognition that the very small percentage of households that are most expensive to serve via terrestrial technology represent a disproportionate share of the cost of serving currently unserved areas."[65] The Commission exempted those areas from the broadband service requirements associated with the CAF and set aside at least $100 million to serve those areas through alternative technologies subject to modestly relaxed broadband requirements.[66] The Commission delegated to the Bureau "the responsibility for setting the extremely high-cost threshold in conjunction with the adoption of the final cost model.[67]

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[58] *USF/ICC Transformation Order*, 26 FCC Rcd at 17228, para. 168.

[59] *Id*., at 17729, para. 171.

[60] *See id.* at 17837-39, paras. 533-38. The Bureau also notes that the RAF threshold may ultimately be applied in areas served by rate-of-return carriers in addition to the areas served by price cap carriers subject to CAF Phase II. *See id*. at 17838 n.893 ("As described above, we have excluded from carriers' broadband service obligations in price-cap territories all areas where the model-estimated cost to serve a location is above an 'extremely high cost' threshold. For rate-of-return areas, we may adopt a similar approach once the CAF model is finalized. In the meantime, rate-of-return carriers are required to extend broadband on reasonable request."); *but see id.* at 18093-95, paras. 1229-32 (seeking comment on alternatives to the model for determining which areas would be served by the RAF).

[61] The *USF/ICC Transformation Order* set the annual budget for CAF Phase II at up to $1.8 billion. *Id.* at 17725-26, paras. 158-59.

[62] *USF/ICC Transformation Order*, 26 FCC Rcd at 17728, para. 167.

[63] *See* ABC Plan, Attach. 2 at 2, Attach. 3.

[64] *USF/ICC Transformation Order*, 26 FCC Rcd at 17728, para. 167.

[65] Id. at 17728, para. 168.

[66] *Id.* at 17837-38, paras. 533-34.

[67] *Id.* at 17729, para. 169.

b. Discussion

67. The Bureau seeks comment on how best to determine the low-end threshold for determining which census blocks should receive support and the extremely high cost threshold to identify the areas eligible for the Remote Area Fund.

68. In setting these thresholds, the Bureau is mindful of certain principles established by the Commission in the *USF/ICC Transformation Order*. First, the Commission directed that "[t]he threshold should be set to maintain total support in price cap areas within our up to $1.8 billion annual budget."[68] Second, as noted above, the Commission set aside at least $100 million to serve the highest cost areas through the RAF. Third, the Commission "anticipated that less -- and possibly much less -- than one percent of all U.S. residences are likely to fall above the 'extremely high-cost" threshold in the final cost model."[69]

69. Given these principles, the Bureau could first establish the extremely high-cost threshold by taking into consideration the Commission's anticipation that fewer than one percent of American homes would be above the threshold and the size of the RAF. The Bureau could then calculate how far below the extremely high-cost benchmark the $1.8 billion CAF Phase II budget could extend, the result being the cost benchmark. Alternatively, the Bureau could first determine the cost benchmark using the principle that it should identify places where the cost of service exceed reasonable end user rates alone, and then calculate the extremely high-cost benchmark based on the $1.8 billion CAF Phase II budget. Under this alternative the Bureau would need to ensure that the resulting extremely high-cost benchmark did not cause more than one percent of American households to be covered by the RAF or unduly increase the size of the RAF.

70. As suggested by the State Members of the Joint Board, another possibility is to establish the extremely high-cost threshold at a level approximately the same as the price of satellite broadband service.[70] Also, the ABC plan proposed to limit support to no more than $176 per line per month which, given the $80 cost benchmark it proposed, would effectively set the threshold for extremely high-cost areas at $256 per line per month.[71]

71. The Bureau seeks comment on these alternative methods of calculating the CAF Phase II cost benchmark and the extremely high-cost threshold.

B. Data Inputs

72. In this section, the Bureau seeks comment on seven data source issues. Four relate to geographic information systems (GIS) data: wire center boundaries, boundaries of existing broadband footprints, business locations, and consumer locations. The other three issues relate to carrier plant: the outside plant mix for individual carriers, the age of the carriers' plant, and the gauge of the carriers'

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[68] *Id.* at 17729, para. 169.

[69] *Id.*, at 17729 n.274.

[70] *See id*.

[71] *Id.*

copper wire plant. The Bureau also seeks comment regarding methods of validating data inputs generally.

1. Wire center boundaries

73. Wire center boundaries represent the edges of the service territories served by each wire center. Typically, locations will be connected to the wire center in whose boundary they fall, even if, absent existing infrastructure, it might be more efficient to connect to a different wire center. In this section, the Bureau seeks comment on three sources of wire center boundary data.

a. Background

74. **Use a commercial data set, such as TeleAtlas.** The TeleAtlas wirecenter boundary database is a readily available data set already in use by the Commission and in the National Broadband Plan modeling.[72] The accuracy of the data has been questioned in other circumstances, however.[73] For example, all areas of the country are assigned to a wire center, even if they lack roads, population, or buildings, which can lead to an overestimate of wire center area. Additionally, given commercial licensing agreements, the Commission is unlikely to have rights to freely distribute commercial data, meaning that commenters may have to rely on aggregated data that can be released consistent with license agreements, or purchase the data set themselves. There also may be areas for which commercial data are unavailable, and the Bureau would need to take one of the approaches described below for those areas.

75. **Develop a new data source.** The Bureau recently sought comment on a new data collection to obtain certain boundary data from all local exchange carriers, including the wire center boundaries of price cap carriers.[74] However, the data collection may not be finalized, approved by the Office of Management and Budget (OMB), and implemented in the timeframe that would enable those boundaries to be used in the CAF Phase II model development process. Once the Bureau develops a new source of data, however, the Commission would own the data without being subject to license agreements or other commercial limitations, and could presumably tailor the data to make it more accurate for the intended modeling purposes.

76. **Use efficient routing regardless of wire center boundaries.** Allowing the model to disregard existing wire center boundaries would be consistent with the forward-looking costs of an efficient provider and would allow the same approach and data set in all areas, even those without

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[72] *See* Omnibus Broadband Initiative, The Broadband Availability Gap: OBI Technical Paper No. 1, at 35-37(April 2010) (OBI, Broadband Availability Gap), *available at* http://www.broadband.gov/plan/broadband-workingreports-technical-papers.html; *see*, *e.g.*, Federal Communications Commission Response to United States House of Representatives Committee on Energy and Commerce, Universal Service Fund Data Request of June 22, 2011Request 7: Study Areas with the Most Eligible Telecommunications Carriers (Table 1: Study Areas with the Most Eligible Telecommunications Carriers in 2010), *available at* http://republicans.energycommerce.house.gov/Media/file/PDFs/2011usf/ResponsetoQuestion7.pdf.

[73] *Connect America Fund*, et al., WC Docket No. 10-90, et al., Order, DA 12-646, at para. 24 (Wireline Comp. Bur. rel. Apr. 25, 2012).

[74] *Comment Sought on Data Specifications for Collecting Study Area Boundaries*, WC Docket Nos. 10-90 and 05-337, Public Notice, DA 12-868 (Wireline Comp. Bur. rel. June 1, 2012).

available commercial data. In addition, the data would not be subject to propriety claims, which would allow free use by the Commission and all interested parties.

b. Discussion

77. The commercial data approach should be more accurate than efficient routing. Efficient routing would underestimate costs in some areas because it would model network deployments that are significantly different from what providers would actually implement given the constraints of existing wire centers. Efficient routing would also be inconsistent with both a scorched node approach to a green-field model and a brown-field model.[75]

78. Although commercial data may not achieve as high a degree of accuracy as a newly developed data set, developing a data source will likely require a significant amount of time. Also, the Bureau notes that the footprints of providers eligible for CAF Phase II support are quite large, so any small error is likely to average out.[76] Moreover, any overstatement of footprint by including uninhabited areas will not affect costs for a model that relies on demographic information.

79. A hybrid approach involving a commercial data source supplemented by data collected from service providers or efficient routing may also make sense or prove necessary in some areas that are not covered by those sources.

80. The Bureau proposes to use wire center boundaries obtained through a new data collection as described above, or in the alternative, commercial datasets, such as TeleAtlas, if the data collection can not be completed in time for the model development process. The Bureau seeks comment on the relative merits of each alternative.

2. Existing broadband footprints

81. The footprints of unsubsidized competitors are ineligible for support, so a data source for their footprints is essential. In addition, a data source for the footprints of support recipients would be important if the model excludes areas they currently serve. The Bureau seeks comment regarding two possible sources of data regarding existing broadband footprints.

a. Background

82. **Use State Broadband Initiative (SBI) data collected for the National Broadband Map.**[77] The SBI represents a single, public data source of where broadband is available at the census block (or smaller) level, as a function of upload and download speeds. However, the National Broadband Map does not differentiate among providers who serve residential and business customers, and therefore

[75] The Bureau also notes that the high-cost proxy model used a scorched node approach, so an efficient routing approach would go beyond existing modeling precedent.

[76] In 2010, incumbent carriers served approximately 116 million lines that were eligible for high-cost support. Of these, approximately 110 million, or 95 percent, were served by price cap carriers. *See* Federal Communications Commission, Staff Analysis of 2010 High-Cost Disbursement Data, *available at* http://www.fcc.gov/document/universal-service-high-cost-program-disbursements.

[77] See www.broadbandmap.gov.

may count census blocks as served when only a business-focused service provider is present. As discussed elsewhere, there are other limits to the data set.[78]

83. **Augment SBI data with additional data source(s).** Augmenting the SBI data with other data sources that would improve its reliability by correcting the most significant errors in the SBI data. This is the approach taken by the ABC Coalition.[79] It may require the use of commercial data sources, however, with all of the attendant licensing obligations and limitations, including the time required to acquire the necessary licenses. Moreover, it does not address other concerns about the SBI data, including specifically the problem of business-only service providers.

b. Discussion

84. The Bureau does not propose a particular data source for existing broadband footprints at this time but seeks comment on each alternative and the Bureau's analysis of the relative attributes of each.

3. Business locations (including community anchor institutions)

85. The model will need to include information about the location of business customers and community anchor institutions, both to ensure that it captures the appropriate number of end-user locations, and to ensure that the cost of shared resources are shared among all users appropriately. The Bureau seeks comment on two possible sources of business location data.

a. Background

86. **Use government data.** Government data, such as the economic census, are publicly available and could be used in the model. This is the approach taken by the ABC Coalition. However, the data are available only at a larger geography, so the model would need to make assumptions about the specific location (distribution) of businesses and community anchor institutions. It also may be inconsistent with the approach taken for consumer locations, discussed below. This approach should provide a reasonable level of accuracy.

87. **Use a commercial data set.** Several vendors have business-location-count data sets available that could be used in the model. This is the approach taken by the National Broadband Plan. While each of these data sets has its limitations, each is regarded as an industry standard. Commercial data are, or can be, highly precise, providing actual customer locations at the address level. Some commercial data sources may even estimate the broadband demand at a given location, allowing for the appropriate scaling of any network infrastructure. Restrictions on the license rights may limit the ability to distribute data at the census block level, however, and the time required to acquire the necessary licenses may delay implementation.

b. Discussion

[78] *See*, *e.g.*, *2011 Seventh Broadband Progress Report*, 26 FCC Rcd at 8078, App. F.

[79] ABC Plan, Attach. 2 (Summary of Model Results).

88. The Bureau proposes to use government data for business locations and seeks comment on its analysis of the alternatives.

4. Consumer locations

89. The model will need information about the location of consumers, which make up the bulk of locations in most areas. The Bureau seeks comment on three sources of consumer location data.

a. Background

90. **Use a commercial data set.** Commercial consumer location data are updated annually (or even more frequently) so that location counts are more likely to reflect growth since the last decennial census. Using such commercial data is consistent with the approaches taken in the National Broadband Plan modeling and by the ABC Coalition. However, using such commercial data would entail all of the difficulties of acquiring and using commercial data, including limited ability to distribute data at the census block level and the possible delay associated with acquiring the necessary licenses. In addition, because such commercial data are available at the census block level, the model would need to make assumptions to locate the consumers' specific locations within the census block.

91. **Use 2010 census data.** Official government census data is easily procured and the data could be used without restrictions. The disadvantage is that data are from 2010, and will not be updated until 2020. In addition, data are at the census block level and so the model will need to make assumptions in order to locate individual residences within the census block. Also, 2010 data are not yet available for all U.S. territories.

92. **Collect actual customer location data from providers.** Collecting actual customer location from carriers would eliminate the need to use assumptions to distribute locations within a geography and the data could be obtained without procurement. The data collection would, however, be subject to approval by OMB and could entail significant administrative burdens for carriers, especially because some carriers may not have geocoded data for all customers. In addition, it would be difficult for the Commission to verify the accuracy of provider-submitted data. For those reasons, it may be difficult for the Bureau to develop, obtain approval for, and implement the data collection in the timeframe anticipated by the Commission.

b. Discussion

93. The Bureau proposes to use a commercial data set for customer locations and seeks comment on its analysis of the relative merits of each alternative.

5. Plant mix (aerial, underground, and buried)

94. A network's outside plant may be hung from utility poles (aerial plant), housed in underground utility conduits (e.g., areas with utility access via manholes), or buried. The cost differences for these different approaches are likely very large.[80] Therefore, the model will be more accurate if it has

[80] See, for example cost differences in the current model (HCPM); http://transition.fcc.gov/wcb/tapd/hcpm/welcome.html.

better information about what areas have what type of outside plant. The Bureau seeks comment on two sources of outside plant mix data.

a. Background

95. **Use provider-submitted data.** The model could rely on carrier-provided data. Using carrier-provided data would permit the model to account for unique or uncommon circumstances in a carrier's outside plant. It would, however, be difficult for the Commission to verify the data submitted by the carriers. In addition, this approach may create administrative burdens on both the carriers and Commission, and would be subject to approval by OMB. This is the approach taken in the ABC Coalition's model.

96. **Use the approach from prior Commission modeling.** The high-cost proxy model estimates the mix of aerial, underground and buried plant for areas of different density. Using the high-cost proxy model's approach would be administratively feasible because the data are publicly available, and a limited number of inputs are required to estimate the mix. It is unclear, however, the extent to which nationwide average plant mixes reflect actual plant mixes in any given area. The variance from the average plant mix would have potentially significant impact on the support levels for smaller price cap carriers or for states that have large variances from the average. The National Broadband Plan modeling used this approach.

b. Discussion

97. The Bureau proposes to use provider-submitted data for plant-mix data and seeks comment on its analysis. In particular, the Bureau seeks comment on how best to validate provider-submitted data.[81]

6. Existing plant

98. If the Bureau adopts the brown-field approach to modeling, the age of the existing plant could be an important driver of cost. Those areas where the outside plant, in particular the cabling of the feeder and distribution lines, are likely to reach the end of their useful lives before the end of the modeling period will require investments more like a green-field build. In addition, the location of fiber in the feeder and distribution plant is likely to be a major driver of costs since costs will depend, in part, on connecting fiber facilities to existing copper. Understanding where such areas are will be important to calculating geographic-specific costs. The Bureau seeks comment regarding two methods identifying the age of existing plant.

a. Background

99. **Collect data from providers about location of fiber facilities and age of plant.** Collecting data directly from carriers would allow the model to account for the actual facts associated with a carrier's existing plant and unique circumstances. It would, however, be difficult for the Commission to verify the data submitted by the carriers. In addition, this approach may create administrative burdens on both the carriers and Commission, and the data collection would require OMB

[81] The Bureau seeks comment generally on validation of data inputs below. *See infra* para. 29.

approval. Moreover, it is not clear whether providers have geocoded information on fiber facilities and age of plant.

100. **Infer location of fiber based on existing broadband footprint, and ignore any geographic variation in plant age.** The model could assume that fiber is used to provide broadband wherever it is offered currently (assuming efficient routing) and calculate costs so that, on average, the cost is representative of areas with a typical distribution of the outside plant age. This is a simple approach that would not require significant data collection. It would provide only carrier- or state-average assumptions, however, which may make it more difficult to justify particular inputs. This is the approach taken in the modeling for the National Broadband Plan.

b. Discussion

101. The Bureau seeks comment on these alternatives and its analysis of the relative attributes of each.

7. Gauge of existing twisted-pair copper plant

102. If the Bureau selects the brown-field approach to modeling, areas with smaller diameter twisted-pair copper wires (higher gauge number) will need shorter loops to achieve the same speed as areas with larger diameter wires. Understanding where such areas are will be important to calculating geographic-specific costs. The Bureau seeks comment regarding two methods of determining the gauge of existing twisted-pair copper plant.

a. Background

103. **Collect data from providers.** The model could use the carriers' actual gauge of copper wire, as provided by the carrier. This would permit the model to address the unique circumstances of each carrier's existing copper wire deployment. It would, however, be difficult for the Commission to verify the data submitted by the carriers. In addition, this approach may create administrative burdens on both the carriers and Commission, and the data collection would be subject to OMB approval. Moreover, it is not clear whether providers have geocoded information on the gauge of their copper plant.

104. **Use average cost.** The model could ignore any geographic variation in the gauge of copper plant and instead calculate costs so that, on average, the cost is representative of areas with all sizes of copper gauge. This is a simple approach that would not require significant data collection. It would provide only carrier- or state-average assumptions, however, which may make it more difficult to justify particular inputs. This is the approach taken in the modeling for the National Broadband Plan.

b. Discussion

105. The Bureau seeks comment on these alternatives and its analysis of the relative attributes of each.

8. Validation of Cost Inputs

106. In order for the model to estimate the cost of providing service, it must include reliable inputs related to cost of the equipment and labor used to provide the service. The Bureau seeks comment on sources for such data and how the data should be validated. For example, the Bureau notes that the ABC Plan includes cost inputs, but that some parties have raised questions about how the inputs were

developed.[82] In addition, it is difficult to compare the ABC Plan's cost inputs to ones actually experienced by the carriers since the model will calculate the forward-looking costs of an efficient provider.[83] Furthermore, even unit costs (i.e., the cost per unit for equipment and supplies) can be hard to compare or even make public given restrictions in purchasing contracts. In light of this example, how should cost inputs be selected? Alternatively, what steps can the Commission take to validate input submitted by providers?

C. Additional Comments Regarding Submitted Models

107. In the *USF/ICC Transformation Order*, the Commission declined to immediately adopt the ABC Coalition's CQBAT model as presented because there had been insufficient opportunity to review and modify the model.[84] Specifically, the Commission cited the established transparency standard that "before any cost model may be 'used to calculate the forward-looking economic costs of providing universal service in rural, insular, and high cost areas,' the 'model and all underlying data, formulae, computations, and software associated with the model must be available to all interested parties for review and comment."[85] In addition, the Commission reiterated that "[a]ll underlying data should be verifiable, engineering assumptions reasonable, and outputs plausible.'"[86]

108. In addition to the comment sought above on particular design decisions and data sources used in the models in the record, the Bureau also seeks comment on the ABC Plan's CQBAT model and the ACS model in light of the established transparency standard. Specifically, the Bureau asks parties to identify any issues of availability that the Bureau should address. The Bureau notes that at least 15 parties have gained access to the models in the record through the protective order process. The Bureau asks parties to identify outstanding questions relating to the verifiability of the underlying data, the reasonableness of engineering or economic assumptions, the reasonableness of model design decisions and choices of data sources additional to those identified here, and the plausibility of outputs on which the Bureau should seek further information for the record, either from the parties that submitted the models or from other interested parties through additional comment, workshops, or other record development processes.

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[82] *See* Letter from Karen Brinkmann, Counsel to Alaska Communications Systems Group, Inc., to Marlene H. Dortch, Federal Communications Commission, WC Docket Nos. 10-90 et al. (filed Apr. 27, 2012); *see also* Letter from Karen Brinkmann, Counsel to Alaska Communications Systems Group, Inc., to Marlene H. Dortch, Federal Communications Commission, WC Docket Nos. 10-90 et al. (filed May 11, 2012) (expressing concern regarding ability of third parties to analyze the cost inputs and engineering and depreciation assumptions of the CQBAT or to verify model outputs and changes in different variables).

[83] *See Universal Service First Report and Order*, 12 FCC Rcd at 8899-901, paras. 224-29; *see also Federal-State Joint Board on Universal Service*, *Forward-Looking Mechanism for High-Cost Support for Non-Rural LECs*, CC Docket Nos. 96-45 and 97-160, Fifth Report and Order, 13 FCC Rcd 21323, 21327-28, para. 9 (1998).

[84] *USF/ICC Transformation Order*, 26 FCC Rcd at 17735, para. 185.

[85] *Id.* (citing *Universal Service First Report and Order*, 12 FCC Rcd at 8913, 8915, para. 250).

[86] *Id.*

V. PROCEDURAL MATTERS

A. Paperwork Reduction Act

109. This document contains proposed new information collection requirements. The Bureau, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4), the Bureau seeks specific comment on how it might further reduce the information collection burden for small business concerns with fewer than 25 employees.

B. Initial Regulatory Flexibility Act Analysis

110. As required by the Regulatory Flexibility Act of 1980 (RFA),[87] the Bureau has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities of the policies and rules proposed in the *Public Notice*. The analysis is found in the Appendix. The Bureau requests written public comment on the analysis. Comments must be filed in accordance with the same deadlines as comments filed in response to the FNPRM and must have a separate and distinct heading designating them as responses to the IRFA. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, will send a copy of this Report and Order and Further Notice of Proposed Rulemaking, including the IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

C. Congressional Review Act

111. The Commission will send a copy of this notice to Congress and the Government Accountability Office pursuant to the Congressional Review Act.[88]

D. Filing Requirements

112. *Filing Requirements*. Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: http://fjallfoss.fcc.gov/ecfs2/.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

[87] *See* 5 U.S.C. § 603.

[88] *See* 5 U.S.C. § 801(a)(1)(A).

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.

- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.

- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

113. People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

114. The proceeding this Notice initiates shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[89] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (*e.g.*, .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

115. For further information, please contact Katie King, Telecommunications Access Policy Division, Wireline Competition Division at (202) 418-7491 or TTY (202) 418-0484.

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[89] 47 C.F.R. §§ 1.1200 *et seq.*

APPENDIX

Initial Regulatory Flexibility Act Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Bureau has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in this Notice. Written comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the FNPRM. The Commission will send a copy of the FNPRM, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the FNPRM and IRFA (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Proposed Rules

2. The Notice seeks comment on a variety of issues relating to the design of a model to estimate the forward-looking economic costs of providing broadband to high-cost areas. The model will be to calculate support levels to be provided to price cap carriers and their affiliates that accept their right of first refusal and deploy services consistent with the obligations set forth in the *USF/ICC Transformation Order*.[4] The model will also be used to determine which areas are above the "extremely high cost" threshold and are therefore subject to the Remote Areas Fund.[5]

B. Legal Basis

3. The legal basis for any action that may be taken pursuant to the Notice is contained in sections 1, 2, 4(i), 214, 254, 303(r), 403, and 706 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 214, 254, 303(r), 403, and 706, and sections 1.1 and 1.1421 of the Commission's rules, 47 C.F.R. §§ 1.1, 1.421.

C. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

4. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[6] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[7] In addition, the term "small business" has the

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[1] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. §§ 601–612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[2] *See* 5 U.S.C. § 603(a).

[3] *See id*.

[4] *See* Notice at para. 2.

[5] *See id.* at paras 63-70.

[6] *See* 5 U.S.C. § 603(b)(3).

[7] *See* 5 U.S.C. § 601(6).

same meaning as the term "small-business concern" under the Small Business Act.[8] A small-business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[9]

5. **Small Businesses**. Nationwide, there are a total of approximately 27.5 million small businesses, according to the SBA.[10]

6. **Wired Telecommunications Carriers**. The SBA has developed a small business size standard for Wired Telecommunications Carriers, which consists of all such companies having 1,500 or fewer employees.[11] According to Census Bureau data for 2007, there were 3,188 firms in this category, total, that operated for the entire year.[12] Of this total, 3144 firms had employment of 999 or fewer employees, and 44 firms had employment of 1000 employees or more.[13] Thus, under this size standard, the majority of firms can be considered small.

7. **Local Exchange Carriers (LECs)**. Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to local exchange services. The closest applicable size standard under SBA rules is for Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[14] According to Commission data, 1,307 carriers reported that they were incumbent local exchange service providers.[15] Of these 1,307 carriers, an estimated 1,006 have 1,500 or fewer employees and 301 have more than 1,500 employees.[16] Consequently, the Commission estimates that most providers of local exchange service are small entities that may be affected by the rules and policies proposed in the FNPRM.

8. **Incumbent Local Exchange Carriers (incumbent LECs)**. Neither the Commission nor the SBA has developed a size standard for small businesses specifically applicable to incumbent local exchange services. The closest applicable size standard under SBA rules is for Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer

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[8] *See* 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[9] *See* 15 U.S.C. § 632.

[10] *See* SBA, Office of Advocacy, "Frequently Asked Questions," http://www.sba.gov/advo/stats/sbfaq.pdf (accessed Dec. 2010).

[11] 13 C.F.R. § 121.201, NAICS code 517110.

[12] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517110" (issued Nov. 2010).

[13] *See id*.

[14] 13 C.F.R. § 121.201, NAICS code 517110.

[15] *See Trends in Telephone Service*, Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division at Table 5.3 (Sept. 2010) (*Trends in Telephone Service*).

[16] *See id*.

employees.[17] According to Commission data, 1,307 carriers reported that they were incumbent local exchange service providers.[18] Of these 1,307 carriers, an estimated 1,006 have 1,500 or fewer employees and 301 have more than 1,500 employees.[19] Consequently, the Commission estimates that most providers of incumbent local exchange service are small businesses that may be affected by rules adopted pursuant to the FNPRM..

9. We have included small incumbent LECs in this present RFA analysis. As noted above, a "small business" under the RFA is one that, *inter alia*, meets the pertinent small business size standard (e.g., a telephone communications business having 1,500 or fewer employees), and "is not dominant in its field of operation."[20] The SBA's Office of Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not "national" in scope.[21] We have therefore included small incumbent LECs in this RFA analysis, although we emphasize that this RFA action has no effect on Commission analyses and determinations in other, non-RFA contexts.

10. **Competitive Local Exchange Carriers (competitive LECs), Competitive Access Providers (CAPs), Shared-Tenant Service Providers, and Other Local Service Providers.** Neither the Commission nor the SBA has developed a small business size standard specifically for these service providers. The appropriate size standard under SBA rules is for the category Wired Telecommunications Carriers. Under that size standard, such a business is small if it has 1,500 or fewer employees.[22] According to Commission data, 1,442 carriers reported that they were engaged in the provision of either competitive local exchange services or competitive access provider services.[23] Of these 1,442 carriers, an estimated 1,256 have 1,500 or fewer employees and 186 have more than 1,500 employees.[24] In addition, 17 carriers have reported that they are Shared-Tenant Service Providers, and all 17 are estimated to have 1,500 or fewer employees.[25] In addition, 72 carriers have reported that they are Other Local Service Providers.[26] Of the 72, seventy have 1,500 or fewer employees and two have more than 1,500 employees.[27] Consequently, the Commission estimates that most providers of competitive local exchange

[17] *See* 13 C.F.R. § 121.201, NAICS code 517110.

[18] *See Trends in Telephone Service* at Table 5.3.

[19] *See id*.

[20] 5 U.S.C. § 601(3).

[21] *See* Letter from Jere W. Glover, Chief Counsel for Advocacy, SBA, to William E. Kennard, Chairman, FCC (May 27, 1999). The Small Business Act contains a definition of "small business concern," which the RFA incorporates into its own definition of "small business." *See* 15 U.S.C. § 632(a); *see also* 5 U.S.C. § 601(3). SBA regulations interpret "small business concern" to include the concept of dominance on a national basis. *See* 13 C.F.R. § 121.102(b).

[22] *See* 13 C.F.R. § 121.201, NAICS code 517110.

[23] *See Trends in Telephone Service* at Table 5.3.

[24] *See id.*

[25] *See id*.

[26] *See id*.

[27] *See id*.

service, competitive access providers, Shared-Tenant Service Providers, and Other Local Service Providers are small entities that may be affected by rules adopted pursuant to the FNPRM.

11. **Wireless Telecommunications Carriers (except Satellite)**. Since 2007, the SBA has recognized wireless firms within this new, broad, economic census category.[28] Prior to that time, such firms were within the now-superseded categories of Paging and Cellular and Other Wireless Telecommunications.[29] Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.[30] For this category, census data for 2007 show that there were 1,383 firms that operated for the entire year.[31] Of this total, 1,368 firms had employment of 999 or fewer employees and 15 had employment of 1000 employees or more.[32] Similarly, according to Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Service (PCS), and Specialized Mobile Radio (SMR) Telephony services.[33] Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.[34] Consequently, the Commission estimates that approximately half or more of these firms can be considered small. Thus, using available data, we estimate that the majority of wireless firms can be considered small.

12. **Local Multipoint Distribution Service**. Local Multipoint Distribution Service ("LMDS") is a fixed broadband point-to-multipoint microwave service that provides for two-way video telecommunications.[35] The auction of the 986 LMDS licenses began and closed in 1998. The Commission established a small business size standard for LMDS licenses as an entity that has average gross revenues of less than $40 million in the three previous calendar years.[36] An additional small business size standard for "very small business" was added as an entity that, together with its affiliates, has average gross revenues of not more than $15 million for the preceding three calendar years.[37] The

[28] *See* 13 C.F.R. § 121.201, NAICS code 517210.

[29] U.S. Census Bureau, 2002 NAICS Definitions, "517211 Paging"; http://www.census.gov/epcd/naics02/def/NDEF517.HTM.; U.S. Census Bureau, 2002 NAICS Definitions, "517212 Cellular and Other Wireless Telecommunications"; http://www.census.gov/epcd/naics02/def/NDEF517.HTM.

[30] 13 C.F.R. § 121.201, NAICS code 517210. The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

[31] U.S. Census Bureau, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210" (issued Nov. 2010).

[32] *Id*. Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "100 employees or more."

[33] *See Trends in Telephone Service* at Table 5.3.

[34] *See id*.

[35] *See Rulemaking to Amend Parts 1, 2, 21, 25, of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, Reallocate the 29.5-30.5 Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services*, CC Docket No. 92-297, Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rule Making, 12 FCC Rcd 12545, 12689-90, para. 348 (1997) ("*LMDS Second Report and Order*").

[36] *See LMDS Second Report and Order*, 12 FCC Rcd at 12689-90, para. 348.

[37] *See id.*

SBA has approved these small business size standards in the context of LMDS auctions.[38] There were 93 winning bidders that qualified as small entities in the LMDS auctions. A total of 93 small and very small business bidders won approximately 277 A Block licenses and 387 B Block licenses. In 1999, the Commission re-auctioned 161 licenses; there were 32 small and very small businesses winning that won 119 licenses.

13. **Satellite Telecommunications**. Since 2007, the SBA has recognized satellite firms within this revised category, with a small business size standard of $15 million.[39] The most current Census Bureau data are from the economic census of 2007, and we will use those figures to gauge the prevalence of small businesses in this category. Those size standards are for the two census categories of "Satellite Telecommunications" and "Other Telecommunications." Under the "Satellite Telecommunications" category, a business is considered small if it had $15 million or less in average annual receipts.[40] Under the "Other Telecommunications" category, a business is considered small if it had $25 million or less in average annual receipts.[41]

14. The first category of Satellite Telecommunications "comprises establishments primarily engaged in providing point-to-point telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications."[42] For this category, Census Bureau data for 2007 show that there were a total of 512 firms that operated for the entire year.[43] Of this total, 464 firms had annual receipts of under $10 million, and 18 firms had receipts of $10 million to $24,999,999.[44] Consequently, we estimate that the majority of Satellite Telecommunications firms are small entities that might be affected by rules adopted pursuant to the FNPRM.

15. The second category of Other Telecommunications "primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry."[45] For this category, Census Bureau data for 2007 show that there were a total of 2,383 firms that operated for the entire year.[46] Of

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[38] *See Alvarez to Phythyon Letter 1998*.

[39] *See* 13 C.F.R. § 121.201, NAICS code 517410.

[40] *Id*.

[41] *See* 13 C.F.R. § 121.201, NAICS code 517919.

[42] U.S. Census Bureau, 2007 NAICS Definitions, "517410 Satellite Telecommunications".

[43] *See* 13 C.F.R. § 121.201, NAICS code 517410.

[44] *See id*. An additional 38 firms had annual receipts of $25 million or more.

[45] U.S. Census Bureau, 2007 NAICS Definitions, "517919 Other Telecommunications", http://www.census.gov/naics/2007/def/ND517919.HTM.

[46] *See* 13 C.F.R. § 121.201, NAICS code 517919.

this total, 2,346 firms had annual receipts of under $25 million.[47] Consequently, we estimate that the majority of Other Telecommunications firms are small entities that might be affected by our action.

16. **Cable and Other Program Distribution.** Since 2007, these services have been defined within the broad economic census category of Wired Telecommunications Carriers; that category is defined as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies."[48] The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees.[49] According to Census Bureau data for 2007, there were a total of 955 firms in this previous category that operated for the entire year.[50] Of this total, 939 firms had employment of 999 or fewer employees, and 16 firms had employment of 1000 employees or more.[51] Thus, under this size standard, the majority of firms can be considered small and may be affected by rules adopted pursuant to the FNPRM.

17. **Cable Companies and Systems**. The Commission has developed its own small business size standards, for the purpose of cable rate regulation. Under the Commission's rules, a "small cable company" is one serving 400,000 or fewer subscribers, nationwide.[52] Industry data indicate that, of 1,076 cable operators nationwide, all but eleven are small under this size standard.[53] In addition, under the Commission's rules, a "small system" is a cable system serving 15,000 or fewer subscribers.[54] Industry data indicate that, of 7,208 systems nationwide, 6,139 systems have under 10,000 subscribers, and an additional 379 systems have 10,000-19,999 subscribers.[55] Thus, under this second size standard, most cable systems are small and may be affected by rules adopted pursuant to the FNPRM.

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[47] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517919" (issued Nov. 2010).

[48] U.S. Census Bureau, 2007 NAICS Definitions, "517110 Wired Telecommunications Carriers" (partial definition), http://www.census.gov/naics/2007/def/ND517110.HTM#N517110.

[49] *See* 13 C.F.R § 121.201, NAICS code 517110.

[50] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, Employment Size of Firms for the United States: 2007, NAICS code 5171102 (issued Nov. 2010).

[51] *See id*.

[52] *See* 47 C.F.R. § 76.901(e). The Commission determined that this size standard equates approximately to a size standard of $100 million or less in annual revenues. *See Implementation of Sections of the 1992 Cable Television Consumer Protection and Competition Act: Rate Regulation*, MM Docket Nos. 92-266, 93-215, Sixth Report and Order and Eleventh Order on Reconsideration, 10 FCC Rcd 7393, 7408 para. 28 (1995).

[53] These data are derived from R.R. BOWKER, BROADCASTING & CABLE YEARBOOK 2006, "Top 25 Cable/Satellite Operators," pages A-8 & C-2 (data current as of June 30, 2005); WARREN COMMUNICATIONS NEWS, TELEVISION & CABLE FACTBOOK 2006, "Ownership of Cable Systems in the United States," pages D-1805 to D-1857.

[54] *See* 47 C.F.R. § 76.901(c).

[55] WARREN COMMUNICATIONS NEWS, TELEVISION & CABLE FACTBOOK 2006, "U.S. Cable Systems by Subscriber Size," page F-2 (data current as of Oct. 2005). The data do not include 718 systems for which classifying data were not available.

18. **Cable System Operators**. The Act also contains a size standard for small cable system operators, which is "a cable operator that, directly or through an affiliate, serves in the aggregate fewer than 1 percent of all subscribers in the United States and is not affiliated with any entity or entities whose gross annual revenues in the aggregate exceed $250,000,000."[56] The Commission has determined that an operator serving fewer than 677,000 subscribers shall be deemed a small operator, if its annual revenues, when combined with the total annual revenues of all its affiliates, do not exceed $250 million in the aggregate.[57] Industry data indicate that, of 1,076 cable operators nationwide, all but ten are small under this size standard.[58] We note that the Commission neither requests nor collects information on whether cable system operators are affiliated with entities whose gross annual revenues exceed $250 million,[59] and therefore we are unable to estimate more accurately the number of cable system operators that would qualify as small under this size standard.

19. **Open Video Services**. The open video system ("OVS") framework was established in 1996, and is one of four statutorily recognized options for the provision of video programming services by local exchange carriers.[60] The OVS framework provides opportunities for the distribution of video programming other than through cable systems. Because OVS operators provide subscription services,[61] OVS falls within the SBA small business size standard covering cable services, which is "Wired Telecommunications Carriers."[62] The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees. According to Census Bureau data for 2007, there were a total of 955 firms in this previous category that operated for the entire year.[63] Of this total, 939 firms had employment of 999 or fewer employees, and 16 firms had employment of 1000 employees or more.[64] Thus, under this second size standard, most cable systems are small and may be affected by rules adopted pursuant to the Notice. In addition, we note that the Commission has certified some OVS operators, with some now providing service.[65] Broadband service providers ("BSPs") are

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[56] 47 U.S.C. § 543(m)(2); *see also* 47 C.F.R. § 76.901(f) & nn.1–3.

[57] 47 C.F.R. § 76.901(f); *see FCC Announces New Subscriber Count for the Definition of Small Cable Operator*, Public Notice, 16 FCC Rcd 2225 (Cable Services Bureau 2001).

[58] These data are derived from R.R. BOWKER, BROADCASTING & CABLE YEARBOOK 2006, "Top 25 Cable/Satellite Operators," pages A-8 & C-2 (data current as of June 30, 2005); WARREN COMMUNICATIONS NEWS, TELEVISION & CABLE FACTBOOK 2006, "Ownership of Cable Systems in the United States," pages D-1805 to D-1857.

[59] The Commission does receive such information on a case-by-case basis if a cable operator appeals a local franchise authority's finding that the operator does not qualify as a small cable operator pursuant to section 76.901(f) of the Commission's rules.

[60] 47 U.S.C. § 571(a)(3)-(4). *See Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, MB Docket No. 06-189, Thirteenth Annual Report, 24 FCC Rcd 542, 606 para. 135 (2009) ("*Thirteenth Annual Cable Competition Report*").

[61] *See* 47 U.S.C. § 573.

[62] U.S. Census Bureau, 2007 NAICS Definitions, "517110 Wired Telecommunications Carriers"; http://www.census.gov/naics/2007/def/ND517110.HTM#N517110.

[63] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, Employment Size of Firms for the United States: 2007, NAICS code 5171102 (issued Nov. 2010).

[64] *See id*.

[65] A list of OVS certifications may be found at http://www.fcc.gov/mb/ovs/csovscer.html.

currently the only significant holders of OVS certifications or local OVS franchises.[66] The Commission does not have financial or employment information regarding the entities authorized to provide OVS, some of which may not yet be operational. Thus, again, at least some of the OVS operators may qualify as small entities.

20. **Internet Service Providers**. Since 2007, these services have been defined within the broad economic census category of Wired Telecommunications Carriers; that category is defined as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies."[67] The SBA has developed a small business size standard for this category, which is: all such firms having 1,500 or fewer employees.[68] According to Census Bureau data for 2007, there were 3,188 firms in this category, total, that operated for the entire year.[69] Of this total, 3144 firms had employment of 999 or fewer employees, and 44 firms had employment of 1000 employees or more.[70] Thus, under this size standard, the majority of firms can be considered small. In addition, according to Census Bureau data for 2007, there were a total of 396 firms in the category Internet Service Providers (broadband) that operated for the entire year.[71] Of this total, 394 firms had employment of 999 or fewer employees, and two firms had employment of 1000 employees or more.[72] Consequently, we estimate that the majority of these firms are small entities that may be affected by rules adopted pursuant to the FNPRM.

D. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements for Small Entities

21. In this Notice, the Commission seeks public comment on model design and input issues associated with a forward-looking economic cost model to be used to determine support for price cap carriers and their affiliates pursuant to Phase II of the Connect America Fund. The Notice seeks comment on possible data inputs that would require reporting by small entities. Specifically, the Notice seeks comment on the use of wire center boundaries based on data collected from local exchange carriers, the use of residential location data collected from service providers, and the use of data from local exchange carriers regarding their mix of aerial, underground and buried plant, the age of existing plant, and the gauge of existing twisted-pair copper plant.

E. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and

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[66] *See Thirteenth Annual Cable Competition Report*, 24 FCC Rcd at 606-07 para. 135. BSPs are newer firms that are building state-of-the-art, facilities-based networks to provide video, voice, and data services over a single network.

[67] U.S. Census Bureau, 2007 NAICS Definitions, "517110 Wired Telecommunications Carriers" (partial definition), http://www.census.gov/naics/2007/def/ND517110.HTM#N517110.

[68] 13 C.F.R. § 121.201, NAICS code 517110.

[69] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517110" (issued Nov. 2010).

[70] *See id*.

[71] U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, Employment Size of Firms for the United States: 2007, NAICS code 5171103 (issued Nov. 2010).

[72] *See id*.

Significant Alternatives Considered

22. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rules for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[73]

23. The Notice seeks comment on a number of model design and inputs questions. The model design issues are not anticipated to have a significant economic impact on small entities insofar as the results produce high-cost support amounts for price cap carriers and their affiliates that accept the right of first refusal pursuant to CAF Phase II. This is primarily because most (and perhaps all) of the affected carriers are not small entities. Moreover, the choice of alternatives discussed is not anticipated to systematically increase or decrease support for any particular group of entities and will not therefore any significant economic impact cannot necessarily be minimized through alternatives.

24. In one respect, the model design may have a significant economic impact on small entities. The Notice seeks comment on using the model to set the "extremely high-cost" threshold, which would identify "remote areas." Such areas will be included in the Remote Areas Fund if they are in a price cap service territory, and would thus be subject an alternative support mechanism that could include small entities. The definition of such areas could also affect the service obligations of rate-of-return carriers, many of which are small entities. The Bureau does not propose a specific methodology for establishing the extremely high-cost threshold, but seeks broad comment on how to do so. The Bureau anticipates that it will consider alternatives, including those that would minimize the significant economic impact on small entities.

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

25. None.

[73] 5 U.S.C. § 603(c)(1)–(c)(4).