

FEDERAL COMMUNICATIONS COMMISSION**47 CFR Parts 54 and 69**

[CC Docket No. 96-45; 97-160; FCC 97-256]

Federal-State Board on Universal Service and Forward-Looking Mechanism for High Cost Support for Non-Rural LECs**AGENCY:** Federal Communications Commission.**ACTION:** Notice of proposed rulemaking.

SUMMARY: On July 18, 1997, the Commission adopted a Further Notice of Proposed Rulemaking (FNPRM) to establish a forward-looking mechanism to determine high cost support for non-rural local exchange carriers (LECs). In the FNPRM, the Commission seeks further comment on the platform design and input variables the Commission should adopt in a forward-looking economic cost mechanism to estimate the costs of the telephone network necessary to provide universal service to high cost areas.

DATES: Interested parties may file comments concerning the platform designs of the switching, interoffice trunking, signaling, and local tandem components on or before August 8, 1997, and parties should submit corresponding reply comments on or before August 18, 1997. Comments concerning the platform design features determining customer location, including the geographic unit for cost calculations and the algorithm measuring customer distribution and line counts, should be submitted on or before September 2, 1997, and reply comments regarding these components should be submitted on or before September 10, 1997. Comments discussing the platform-design issues relating to outside plant investment, including the algorithms determining plant mix, installation and cable costs, drop lengths, structure sharing, the fiber-copper cross-over point, digital loop carriers, and the wireless threshold must be submitted on or before September 24, 1997, with reply comments submitted on or before October 3, 1997. Comments discussing all platform issues not otherwise addressed, including the components addressing general support facilities, expenses, and support areas, and all input values issues must be submitted by October 17, 1997, with reply comments due on or before October 27, 1997.

ADDRESSES: Parties should send their comments or reply comments to Office

of the Secretary, Federal Communications Commission, 1919 M Street, N.W., Room 222, Washington, D.C. 20554. Parties should also send copies of their comments to the individuals listed on the Service List included as Attachment A. Parties should also file one copy of any documents filed in this docket with the Commission's copy contractor, International Transcription Services, Inc., 1231 20th Street, N.W., Washington, D.C. 20036. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center, 1919 M Street, N.W., Room 239, Washington, D.C. 20554. Commenters may also file informal comments or an exact copy of formal comments electronically via the Internet at <<http://gulfoss.fcc.gov/cgi-bin/webssl/cgi-bin/comment/comment.htm>>. Only one copy of electronically-filed comments must be submitted. A commenter must note whether an electronic submission is an exact copy of formal comments on the subject line. A commenter also must include its full name and Postal Service mailing address its submission.

Parties are also asked to submit their comments and reply comments on diskette. Such diskette submissions are in addition to and not a substitute for the formal filing requirements addressed above. See section IV. C., paragraph 90, under Supplementary Information for further details. Parties submitting diskettes should submit them to Sheryl Todd of the Common Carrier Bureau, 2100 M Street, N.W., Room 8611, Washington, D.C. 20554.

FOR FURTHER INFORMATION CONTACT: Valerie Yates, Legal Counsel, Common Carrier Bureau, (202) 418-1500, or Sheryl Todd, Common Carrier Bureau, (202) 418-7400.

SUPPLEMENTARY INFORMATION: This is a summary of the FNPRM adopted and released by the Commission on July 18, 1997. The full text of this FNPRM is available for inspection and copying during normal business hours in the FCC Reference Center (Room 239), 1919 M St., NW, Washington, DC.

The FNPRM divides the issues related to developing model platform components and input values into four broad groups, and establishes a series of comment and reply comment deadlines that, together, create a staged approach to the model development process during which the Common Carrier Bureau, acting pursuant to delegated authority, will provide guidance to the model proponents.

The FNPRM requests comment on platform and input issues related to the

following groups of issues: switching, interoffice trunking, signaling, and local tandem investment; customer location; outside plant design and investment; and other miscellaneous issues including general support facilities, depreciation, expenses, and support areas. The FNPRM also requests comment on how the Commission should determine the measure of local usage that should be included in the definition of universal service.

Summary of Notice of Proposed Rulemaking*I. Modeling Forward-Looking Economic Cost*

1. Introduction. In the May 1997 Report and Order on Universal Service the Federal Communications Commission adopted a plan for establishing universal service support mechanisms for rural, insular, and high cost areas that will replace the current patchwork of implicit subsidies with explicit support based on the forward-looking economic cost of providing supported services. The Commission adopted a forward-looking economic cost methodology that will calculate universal service support in four steps. First, the Commission will estimate the forward-looking economic costs of providing universal service in rural, insular, and high cost areas. Second, the Commission established a nationwide revenue benchmark calculated on the basis of average revenue per line. Third, the Commission will calculate the difference between the forward-looking economic cost and the benchmark. Fourth, federal support will be 25 percent of that difference, corresponding to the percentage of loop costs allocated to the interstate jurisdiction. The Commission further decided to use forward-looking economic cost studies conducted by state commissions that choose to submit such cost studies to determine universal service support.

2. In the Universal Service Order, the Commission concluded that support for universal service should be based on the forward-looking economic cost of constructing and operating the network facilities and functions used to provide the services. The Commission additionally concluded that a state could elect to submit its own cost study to calculate the level of universal service support available to carriers in its state, if the state's study meets the criteria outlined in the Order. That study must be based on forward-looking economic cost principles, be supported by publicly available data and computations, and be the same cost

study that is used by the state to determine intrastate universal service support levels pursuant to section 254(f). In the Order, the Commission asked states to elect, by August 15, 1997, whether they will conduct their own forward-looking economic cost studies. States that elect to conduct such studies must file them with the Commission on or before February 6, 1998.

3. The Commission is currently considering two models, BCPM and Hatfield, to use as a mechanism to calculate forward-looking economic cost for providing universal service. The BCPM and Hatfield models produce dramatically different results, even when modeling a network over the same geographic area, because of differences in both their platform design and their input values. Both models are composed of modules representing the different components of an exchange network. These components include customer location, outside plant investment, switching, interoffice trunking, signaling, and local tandem investment, general support facilities, depreciation, other expenses, and the support area. Each module consists of related platform design assumptions and input values. The Commission concluded in the Order that the Commission would select a platform by the end of 1997, and that the Commission would select a complete mechanism, including inputs, by August 1998. The Commission's methodology will be implemented on January 1, 1999. In the FNPRM, the Commission has adopted specific procedures and documentation requirements to allow the Commission, state regulators, and the parties to compare and validate the models most effectively.

4. The Commission expects that all future submissions of the platforms of the two models will be flexible enough to incorporate revisions within the individual component algorithms. Because the design features for the components vary in complexity, the Commission concludes that a graduated submission and review process will permit the Commission, the states, and the public, to evaluate all features thoroughly. The Commission concludes that, besides affording the Commission sufficient time to evaluate the more complex platform components, requiring proponents to present individual components for final submission in stages will prevent constant revisions of an entire platform from disrupting the evaluation process.

A. Procedures for Revising the Models

5. Staged Platform Submission Schedule. The Commission requires that comments concerning the platform design of the switching, interoffice trunking, signaling, and local tandem components must be submitted on or before August 8, 1997, and that parties should submit corresponding reply comments on or before August 18, 1997. Comments concerning the platform design features determining customer location, including the geographic unit for cost calculations and the algorithm measuring customer distribution and line counts, must be submitted to the Commission on or before September 2, 1997 and reply comments regarding these components must be submitted on or before September 10, 1997. Comments discussing the outside plant investment components, including the algorithms determining plant mix, installation and cable costs, drop lengths, structure sharing, the fiber-copper cross-over point, digital loop carriers, and the wireless threshold must be submitted on or before September 24, 1997, with reply comments submitted on or before October 3, 1997. Comments discussing all platform issues not otherwise addressed, including the components addressing general support facilities, expenses, and support areas must be submitted by October 17, 1997, with reply comments due on or before October 27, 1997.

6. Commission Guidance. Before and during the initial comment and reply comment periods, the Commission intends to hold one or more public workshops on particular model platform components. Further, prior to the Commission's adoption of a particular platform in December 1997, the Common Carrier Bureau will issue orders and public notices on a regular basis explaining its analysis of the model submissions and industry comments and selecting particular design features. The Commission will work with the states throughout this process so that the selected mechanism reflects the concerns of state regulatory authorities in developing forward-looking economic cost methodologies for state universal service programs or for cost studies to be submitted in this proceeding.

7. Inputs Submission. Although the Commission has stated its intention to select default input values by August 1998, it must receive the proponents' input submissions in order to evaluate a model's performance. The Commission requires that comments regarding all input values be submitted

by October 17, 1997. Reply comments must be submitted by October 27, 1997. In addition, commenters should provide explanation and documentation of their suggestions in order to establish that their suggestions are reasonable, accurate, and reflect forward-looking cost.

8. Additional Revision Procedures. The Commission requests that the current models be modified, if necessary, to generate output reports that: (a) Show costs by element of the network; (b) disaggregate study area expenses, investments, taxes, and return according to USOA accounts; and (c) calculate study area support as the difference between CBG cost and the benchmark for every CBG in a study area. Parties providing the models under consideration shall provide the Commission with a clear and comprehensive programmers' flow chart because the current models are unclear as to how the calculations are being made. The Commission also requests that the models be revised, if necessary, to employ the NECA telephone company study area names and identification codes in all subsequent revisions. In addition, to enable the Commission and commenters to manage their resources most effectively, the Commission requests that the parties submitting models give the Commission and commenters reasonable advance warning of the approximate date when they expect to release a new version of a model. Also, if a party intends to release a new version of a model that is designed to work with a software or hardware product that differs from the previous version, the Commission requests that party give the Commission and others reasonable advance notice of what hardware and software they must secure to operate and evaluate the new version of the model. Finally, the Commission requests that a party that releases a new version of a model clearly indicate the major changes that have been made, and, in particular, any additions to the model. The Commission requests that the model proponents file complete documentation including all third-party information, studies, and surveys used by the models. The Commission understands that some of this information is proprietary and cannot be released to the public, and encourages parties to use the Commission's procedures for submitting proprietary information to the Commission wherever necessary.

9. The models under consideration do not presently include any information on Alaska and insular areas. In the Order, however, the Commission

concluded that non-rural carriers in Alaska and the insular areas begin receiving support based on a forward-looking mechanism at the same time as other non-rural carriers (i.e., January 1, 1999). Accordingly, the Commission asks that parties discuss the input values or model design features that would allow the mechanism adopted in this proceeding to determine support for non-rural carriers in Alaska and insular areas.

10. Hybrid Models. The Commission will determine the design components of the platform and input values that will most accurately estimate carriers' forward-looking economic costs for the mechanism that it will adopt. Although they share some design features, BCPM and Hatfield differ in many respects and possess different strengths and weaknesses. The Commission encourages the proponents of Hatfield and BCPM to refine their models by incorporating portions of the other's model where appropriate. Whether the Commission chooses to create its own model or whether it relies upon a model developed by the industry, the Commission seeks comment on the ramifications of combining features of the two models. The Commission seeks comment on whether alternative platform components or assumptions, not currently included in either Hatfield or BCPM, could be incorporated into Hatfield, BCPM, or a hybrid model created by the Commission.

B. Platform Design Components and Input Values

i. Customer Location

11. Geographic Unit. A geographic unit is the size of the serving area over which cost is calculated. The Commission seeks comment on whether it should adopt an area smaller than a CBG as the geographic unit for customer location and cost calculation in the platform design. The Commission seeks comment on whether using CBGs, CBs, or grid cell data would allow the Commission to calculate the cost of providing universal service more accurately and would better target support. Advocates of using geographic units smaller than CBGs should also discuss the technical feasibility of their proposal and the availability of relevant data at the proposed level of detail.

12. Distribution of Customers. Customers may be clustered in towns, spread uniformly over regions, or otherwise distributed across CBGs. In dealing with the distribution of customers, the models use algorithms to project the customer distribution within a geographic unit in order to estimate

the cost of the outside cables required to serve customers. In general, BCPM uses a uniform customer distribution algorithm, which assumes that customers are spread evenly across an entire CBG. In rural areas, BCPM eliminates areas from the CBG data that are more than 500 feet from any road, based on its assumption that households are located within 500 feet of a road. Several commenters criticized the assumption present in BCPM that households are evenly distributed across a geographic unit. In contrast to BCPM, Hatfield uses a clustering algorithm. The Hatfield algorithm first removes the empty space within each CBG by removing CBs when census data indicates that they do not contain any population. In low-population-density CBGs, the Hatfield algorithm clusters 85 percent of the population within a town. For dense areas, Hatfield uses a clustering algorithm that establishes two clusters if more than fifty percent of the CBG is empty and four clusters where 50 percent or less of the CBG is empty. Finally, in CBGs where the line density is so high that customer locations must necessarily be "stacked," the Hatfield algorithm assumes that the population lives in multi-unit dwellings.

13. The Commission tentatively concludes that a clustering algorithm would more accurately distribute customers within some CBGs and would consequently generate more accurate estimates of loop length and, therefore, of the cost of the outside plant. Furthermore, the Commission tentatively concludes that, if a model presumes that customers are clustered, the accuracy of the position of the population cluster relative to the wire center is important to an accurate prediction of the necessary support amount. The Commission therefore tentatively concludes that the selected mechanism should calculate population clusters' proximity to wire centers with more precision than the models currently permit. The Commission seeks comment on these tentative conclusions and also seeks comment on how BCPM's uniform distribution algorithm and Hatfield's clustering algorithm could be modified to provide more accurate information regarding the locations of customers. The Commission also seeks comment on how to improve both models' accuracy in assigning CBGs to serving wire centers.

14. The Commission seeks comment on whether, instead of the methods currently used by either Hatfield or BCPM, an alternate method should be used to locate population in carrier serving areas. Generally, the Commission seeks comment on whether

loop lengths should be more closely linked with actual loop statistics. The Commission seeks comment on whether a method that combines actual geographical maps, census data, and the location of the serving wire centers would estimate customer location, and therefore costs, better than the algorithms currently used by the models. The Commission specifically seeks comment on whether the following proposal would be a more accurate method by which to estimate the distribution of customers. In relation to locating residential population, the Commission notes that census data provide the number of households within a CB as well as internal point coordinates and polygon vertex coordinates. The Commission seeks comment on what currently available commercial mapping software, if any, could be used to identify the location of customers in all CBs within a service territory. The Commission further seeks comment on whether a model should impose a uniform grid over an ILEC's service territory in order to create subscriber population clusters, determining the size of the cluster according to the technology constraints of electronic systems that are used to provide universal service, such as Asymmetric Digital Subscriber Line (ADSL) and High bit rate Digital Subscriber Line (HDSL) technologies, rather than basing cluster sizes on census data. The Commission seeks comment on whether this approach is more representative of the engineering design of a network because it does not rely on census-mapping conventions. The Commission seeks comment on whether this proposal could be incorporated into either Hatfield, BCPM, or any hybrid model that the Commission may develop. The Commission also seeks comment on whether any alterations in either BCPM or Hatfield would be necessary to incorporate this proposal into either model or a potential hybrid model.

15. Line Count. The selected mechanism must estimate a line count at the wire center, CBG, or CB level if the Commission concludes that cost estimates should be developed at those levels. Both models use a "closing factor," i.e. a ratio of line counts, as provided by the NECA and ARMIS databases, compared to the models' estimates, to adjust the estimates produced by their algorithms to reflect the actual ILEC line counts. Neither model clearly discloses the closing factors for all lines that are used in their line count calculations. Because reliable line counts are necessary for

determining accurate cost estimates, it appears that reasonable estimates of the number of lines in each CBG, CB, or grid cell are necessary to calculate universal service support, even if the Commission decides to provide support on a wire center basis. The Commission tentatively concludes that the sizes and uses of models' closing factors should be evident to the user so that they may be evaluated. The Commission seeks comment on whether the selected mechanism should adopt a maximum closing factor of 10 percent, as suggested by the state members of the Joint Board. The Commission also seeks comment on whether other data sources could be used to enhance the models' algorithms or be used to create an alternative method for determining line counts. The Commission seeks comment on whether, for example, the Commission should assign business lines to geographic units by using commercially produced maps that give the coordinates of all businesses located in the U.S. along with their employment by standard industrial classification (SIC) code. The Commission seeks comment on whether such a method should use some multiple of the employment data to estimate the number of business lines in each grid block. Alternatively, the Commission seeks comment on whether there are any databases that use zip code information or precise latitude and longitude (geo-coding) information that could be used to improve the line-count estimation process.

16. Interested parties may file comments on all issues regarding customer location on or before September 2, 1997, and reply comments on or before September 10, 1997.

ii. Outside Plant Investment

17. Outside plant investment includes every part of an ILEC's network infrastructure connecting the wire center to customer locations.

18. Plant Mix. The outside plant consists of a mix of aerial, underground, and buried cable. It appears that while both models have made many improvements, the failure of both BCPM and Hatfield to incorporate terrain factors into their plant-mix tables seriously undermines the accuracy of the outside plant costs predicted by each model. The Commission finds that an efficient carrier will vary its plant mix according to the population density of an area. The Commission, therefore, tentatively concludes that the assignment of plant mix defined by the selected mechanism should reflect both terrain factors and line density zones. Specifically, the Commission tentatively concludes that relatively more feeder

and distribution cable should be assigned to aerial installation for all population density groups in wire centers characterized by "hard rock" conditions than those in wire centers with other terrain conditions. The Commission seeks comment on these tentative conclusions. The Commission also seeks comment on identifying the terrain that would lead an efficient firm to minimize forward-looking costs by using aerial plant and on whether climate conditions, such as the possibility that a hurricane will destroy aerial plant, will affect an efficient carrier's decision to deploy aerial plant.

19. The Commission directs the models' proponents to justify fully the default values they selected for their outside-structure plant mix, noting that recent installations of outside structure may more closely meet forward-looking design criteria than do historical installations. The Commission seeks comment on these issues and encourages parties to file documentation supporting suggestions to alter either Hatfield or BCPM's input values or default assumptions concerning plant mix. The Commission also seeks comment on the input values that will accurately reflect the level of impact that varying terrain conditions have on costs.

20. Installation and Cable Costs. The forward-looking economic cost mechanism must estimate the cost of installing wire and cable facilities as part of the overall cost of building a network to provide supported services. These costs can be expected to vary by soil type and line density zone. The default values for installation costs included in BCPM and Hatfield represent their proponents' estimates of the total cost of installing wire and cable facilities. Both BCPM and Hatfield make assumptions about soil conditions and population density to estimate the cost of installing buried and underground cable. Specifically, the models use different numbers of density zones. It appears that a greater number of density zones helps identify high and low cost areas more accurately; too many density zones, however, would make the data calculations too complex. The Commission tentatively concludes that the selected mechanism should specify costs for installation of aerial cable, buried cable, and underground cable that incorporate terrain factors and line density zones. The Commission seeks comment on this tentative conclusion.

21. In the Majority State Members' Second Report, state members expressed preference for BCPM's approach because they found that Hatfield's approach did not adequately account for

the effect of different types of installation activity on outside plant costs, and because using a multiplier will overestimate costs in some areas and underestimate costs in other areas. Based on the majority state member's recommendations, the Commission tentatively concludes that the selected mechanism should adopt BCPM's approach of prescribing additional costs to account for additional expenses caused by difficult terrain, rather than Hatfield's approach of using cost multipliers. The Commission seeks comment on this tentative conclusion, on how this tentative conclusion would affect cost estimates, and on the appropriate input values for such additional expenses. In addition, the Commission seeks comment on the majority state members' conclusion that it is not reasonable to assume, as Hatfield does, that an installer could simply increase its use of distribution cable by 20 percent to avoid burying cable in difficult soil conditions.

22. The Commission tentatively concludes that the selected mechanism should specify costs per foot for conduit installation that vary by line density zone, as proposed in both BCPM and Hatfield. The Commission also tentatively concludes that the mechanism should define density zones based on lines per square mile, as in Hatfield. The Commission seeks comment on these tentative conclusions and on the number of density zones that should be included in the selected mechanism. The Commission invites comment on how to calculate forward-looking economic costs of conduit installation and welcomes data on any recent conduit installations, including conduit installed for purposes other than the construction of telephone networks.

23. The Commission tentatively concludes that materials and installation costs should be separately identified by both density zone and terrain type. The Commission seeks comment on the default input values that the selected mechanism should use, and asks parties to present supporting cost data. The Commission seeks comment on the accuracy of the values in BCPM's cost tables and of Hatfield's cost multipliers, and encourages parties to submit company records or other industrial data to support their position. The Commission also seeks comment on the cost of installing aerial, buried, and underground cable, regardless of whether it is used to provide telephone service, and encourage parties to submit detailed cost data on any recent cable installations. In addition, the Commission seeks comment on whether

it would be possible to use national statistical averages of contractor construction prices and independent verification of the cost of installation of distribution plant to verify these costs. The Commission also seeks comment on whether a labor cost variable should be incorporated into the selected mechanism.

24. Because the Commission has received no documentation confirming that feeder and distribution cable installation costs should differ, the Commission tentatively concludes that the selected mechanism will adopt Hatfield's assumption that such costs are identical. The Commission seeks comment on this tentative conclusion and encourage parties to submit documentation in support of their positions.

25. Drops. A drop is the connection between a residence or business and the distribution cable. In BCPM and Hatfield, several cost elements are combined under the general heading of drops. These cost elements include the cost of the copper or fiber loop that extends from the distribution cable to the residence or business, the terminal and splice investment, and the pedestal costs. BCPM estimates the drop length as the distance from the corner of the residential lot to the center of the residential lot. Hatfield assigns predetermined loop lengths for each of seven density zones. The lengths are longer in low density areas than elsewhere. In general, the drop lengths are longer in BCPM than in Hatfield.

26. The Commission seeks comment on whether the selected mechanism should estimate drop lengths or should incorporate predetermined drop length assumptions. The Commission also seeks comment on the accuracy of Hatfield's assumed drop lengths. Because an efficient carrier's network must include drops in order to provide the supported services, the Commission tentatively concludes that the selected mechanism will determine the forward-looking economic cost of drops, including installation, terminal, splice, and pedestal costs. The Commission invites comment on the accuracy of the estimated costs of these items under the proposed models.

27. Structure Sharing. Structure sharing describes the practice of sharing facilities such as poles, trenches, and conduits with other utilities. BCPM assumes that an efficient telecommunications carrier will not benefit very much from sharing. BCPM's default input values assign between 50 and 100 percent of the costs of the poles and between 80 and 100 percent of the cost of trenches and conduits used by

telephone companies to those companies. The Hatfield model assumes utilities will engage in substantial sharing; for the most part, Hatfield's default input values assign between 25 percent and 50 percent of the costs of shared facilities to telephone companies. Both models alter the percentages of costs they assume will be shared depending on the type of structure (buried, conduit, or aerial) and on the line density zone.

28. Because it appears that an efficient carrier would vary its sharing levels according to installation activity and terrain, as BCPM assumes, the Commission tentatively concludes that the selected mechanism should adopt BCPM's categories for installation activities and terrain conditions. The Commission seeks comment on BCPM's estimates for the relative frequency for each type of installation activity. The Commission tentatively concludes that the selected mechanism should also include line density zones in its estimates of sharing and the Commission seeks comment on whether, because it tentatively concludes above that Hatfield's line density zones are superior, the selected mechanism should use Hatfield's line density zones to estimate sharing. The Commission seeks comment on how BCPM's assumptions would need to be altered to accommodate Hatfield's line density zones.

29. The Commission tentatively concludes that Hatfield incorrectly assumes that carriers benefit from sharing for such cable and that the selected mechanism will assign 100 percent of costs to the telephone company for cable that is buried using a cable plow. The Commission also tentatively concludes that Sprint's suggested value of 66 percent is an acceptable aggregate default input value for the percent of costs assigned to the telephone company for all other shared facilities. The Commission also seeks comment on AT&T's contention that changes to the regulatory climate will increase the extent to which carriers are required or are willing to share structures.

30. Loop Design. The loop plant constitutes a significant part of the network cost that the models calculate. The two models, however, differ greatly in their assumptions regarding loop design and standards. In selecting the loop design components for the selected mechanism, the Commission seeks to implement its conclusion that the mechanism employ the least-cost, most-efficient and reasonable technology for providing the supported services and the Act's provision that universal

service support be sufficient. The Commission will consider fiber-copper cross-over point, loop standards, and digital loop carriers in its selection process.

31. Fiber-Copper Cross Over Point. The fiber-copper cross-over point determines when carriers will use fiber cable instead of copper cable in their feeder plant. In addition, a carrier's decision regarding the fiber-copper cross-over point will affect whether that carrier uses loading coils, because loading coils are used to extend the viable length of copper cable.

32. The Joint Board recommended that the choice between fiber and copper should reflect the least-cost method of placing loop facilities, and the Commission agreed in the Order that "the technology assumed must be the least-cost, most-efficient, and reasonable technology" and that the "model must include the capability to examine and modify the critical assumptions and engineering principles * * * includ[ing] * * * fiber-copper cross-over points * * *". Neither the BCPM nor Hatfield proponents have submitted studies showing whether their cross-over points are designed to reflect the Commission's least-cost criterion.

33. The Commission tentatively concludes, based on the comments of NCTA/ETI and the recommendation of the majority state members of the Joint Board, that the BCPM maximum cross-over default value should be set at 18,000 feet rather than 12,000 feet, and seek comment on this tentative conclusion. The Commission seeks comment on whether the BCPM fiber/copper cross-over point can also be set at 18,000 feet when the copper loop length is extended to 18,000 feet. The Commission also seeks comment on the impact on the costs for digital loop carriers of their decision regarding the appropriate fiber-copper cross-over point.

34. Loop Standards. WorldCom contends that the Commission should specify one of more loop design standards in order to create greater certainty in loop modeling process. WorldCom states that the two loop standards that the Commission should consider are the Revised Resistance Design (RRD) and the Carrier Serving Area (CSA) Standards. WorldCom contends that because the CSA standard will also enable LECs to offer video dialtone services, which would have significant commercial value, the universal service fund should not pay for LEC entry into this new market against competitors that would not receive universal service funding. The Commission seeks comment on whether

it should adopt any loop design standards in the forward-looking economic cost mechanism, and if so, which standard should be adopted.

35. Digital Loop Carriers. Digital loop carriers (DLCs) connect fiber feeder cables and copper loops. DLCs transform electric signals carried on the copper loops into optical signals carried on fiber lines and vice versa. Most large DLCs can assign multiple subscriber lines to a single electronic channel rather than assigning one channel per subscriber line. Both Hatfield and the BCPM assume that, when they are to be used, DLCs would be one of two sizes, depending upon the number of subscriber lines connected to them. BCPM assumes the larger DLC will be used for more than 672 subscriber lines. Hatfield, by contrast, switches to the larger DLC at 384 subscriber lines, but allows adjustment of this level as a variable.

36. Although both Hatfield and BCPM assume extensive deployment of DLCs, their cost estimates differ significantly. The Commission seeks comment on the models' assumptions regarding the number of subscriber lines that should trigger the use of a large DLC. The Commission also requests comment on whether the models should consider use of DLCs of more than two sizes; the Commission particularly seeks comment on whether DLCs smaller than those used in the model are available and under what circumstances such smaller DLCs might be used. The Commission also requests comment on the impact of the fiber-copper cross-over on the number and size of DLCs needed in the network.

37. The Commission seeks comment on whether the models should also compare the cost of extending fiber to fewer points in the CBG, placing larger DLCs at those points, and running copper to customers including the possible additional cost of repeater electronics on the longer copper loops. The Commission seeks discussion of how to calculate the forward-looking economic cost of DLCs. Parties should discuss whether the models' current inputs for these costs are reasonable, as well as Sprint's proposed BCPM modification.

38. Wireless Threshold. Once the level of support a carrier will receive is determined, the carrier may use whatever technology it prefers to provide the supported services; the level of support it receives is not dependent upon the technology it uses. Both BCPM and Hatfield, however, estimate the costs of providing the supported services using engineering assumptions based on wireline technology.

39. In light of the contention by RUS that wireless service does not necessarily cost less than \$10,000.00 per loop, the Commission seeks comment on whether the cost of a loop should be capped at \$10,000.00 in all cases. The Commission agrees with the wireless commenters that, to the extent practical, the selected mechanism should estimate the cost of providing the supported services using wireless technology in areas where wireless technology is likely to be the least-cost, most efficient technology. The Commission notes, however, that it has received almost no information regarding how to estimate such costs, or the criteria that the selected mechanism should use to determine whether wireline or wireless service is more economical. Thus, the Commission seeks comment on the feasibility of including an additional component in the mechanism that would compare the cost of providing service via a wireless network with the cost of providing service via a wireline network and would choose the lowest-cost technology to calculate the costs of providing the supported services. The Commission seeks comment on whether, because wireless companies must currently determine whether it is economical for them to enter a particular market, wireless companies have already developed such models. The Commission strongly encourages commenters supporting the inclusion of engineering assumptions regarding wireless technology in the mechanism to submit models or other assumptions that they believe should be included. The Commission further encourages commenters to submit data about the cost and types of wireless networks and their components in support of their suggestions, and reminds commenters that any wireless component that might be added to the selected mechanism must also meet the Commission's criteria.

40. The Commission notes that BCM was first filed with the Commission in December 1995. The Commission seeks comment on the length of time necessary to develop a mechanism that compares the cost of wireless engineering with the cost of wireline engineering. Specifically, the Commission seeks comment on whether modeling wireless technology would be less complex than modeling wireline technology, and therefore whether a wireless platform could be developed by December 1997, and a complete mechanism, including inputs, by August 1998, in accordance with the Commission's schedule. In the alternative, the Commission seeks

comment on whether the development of a competitive bidding mechanism would be a better way to capture the differing costs between wireline and wireless technology.

41. Because the Commission is uncertain whether or not it will be able to develop a mechanism that includes the cost of wireless technology within their schedule, it seeks comment on whether basing support amounts on the cost of wireline technology will be consistent with section 254 and with the Commission's universal service goals. The Commission tentatively concludes that providing support based on the cost of a wireless network to provide the supported services would meet the statutory directive that support be "sufficient." The Commission seeks comment on this tentative conclusion. The Commission also seeks comment on whether basing support solely on wireline costs, when wireless technology may offer a less expensive option, would be consistent with the Commission's conclusion that the mechanism should use the least-cost, most-efficient technology available. The Commission additionally seeks comment on whether the models should include assumptions that would consider microwave, satellite, or other non-wireline technologies in situations where such technologies could allow the provision of universal service more cost-effectively than wireline technology.

42. Additional Outside Plant Input Value Issues. The Commission must determine what input values it should use for the following components of outside plant: manholes, poles, anchors, guys, aerial cable, and building attachments, network interface devices, service area interfaces, and fill factors. The Commission seeks data demonstrating the forward-looking economic cost for each component, including materials and installation, for inclusion in the selected mechanism.

43. Poles, Anchors, Guys, Aerial Cable, and Building Attachments. The Commission seeks comment on what the accurate input values should be for the forward-looking economic cost of materials and installation for poles. The Commission seeks comment on the reasonableness of the type of materials chosen by each model. The Commission also seeks comment on whether installation costs for poles should vary with terrain. Commenters should submit cost documentation in support of their suggested input values. The Commission also seeks comment on whether BCPM's materials and installation cost estimates for anchors and guys are accurate, and whether

Hatfield's pole materials and installation costs are sufficient to cover the cost of anchors and guys. The Commission also seeks comment on whether the selected mechanism should identify separately costs for poles, guys, and anchors. Parties should submit cost data in support of their suggested input values. Because both models include them, the Commission tentatively concludes that the selected mechanism should include pole spacing input values. The Commission seeks comment on this tentative conclusion and on the pole spacing input values that we should use. In light of the models' similar input values, the Commission seeks comment on whether the models' input values for these costs are accurate or on whether averaging the two sets of input values would provide an accurate calculation of these costs. Commenters should submit cost documentation in support of their suggested input values.

44. The Commission tentatively concludes that the selected mechanism should include feeder and distribution cable costs for both copper and fiber. The Commission seeks comment on the forward-looking costs of copper and fiber cable. The Commission specifically seeks comment on whether, as the BCPM proponents contend, buried cable and underground cable are less expensive than aerial cable. Commenters should submit cost documentation in support of their suggested input values.

45. Network Interface Devices. A network interface device (NID) is a device that connects the wiring that belongs to a customer, and is located inside a customer's premises, to the loop facilities outside a customer's premises. The Commission tentatively concludes that it should prescribe NID costs in the selected mechanism. The Commission tentatively concludes that Hatfield correctly separates the cost of protection blocks from the cost of the NID, and correctly distinguishes between the cost of a residential NID and a business NID, and that the selected mechanism should incorporate these distinctions. The Commission seeks comment on these tentative conclusions, and on the correct input values that should be used for NID and related costs. Such comments should be supported with cost data wherever possible.

46. Service Area Interfaces. The Service Area Interface (SAI) is the physical interface between distribution and feeder cable. The SAI is usually located outside buildings, but is located inside buildings when the feeder plant terminates in the basement of a high-rise building. The Commission tentatively

concludes that the selected mechanism should include the cost of SAI for various cable sizes, and should assume different costs for indoor and outdoor cable as Hatfield does. The Commission seeks comment on this tentative conclusion. In light of the wide disparities in SAI costs assigned by the mechanisms, the Commission seeks comment on the forward-looking economic costs of SAIs, and encourages parties to submit additional data on these costs.

47. Fill Factors and Utilization. A cable fill factor is the percentage of the total usable capacity of cable that is expected to be used rather than the amount available in reserve. The Commission notes that, over time, the models' estimates for fill factors have converged. The Commission seeks comment on the fill factor that should be used for the selected mechanism. In light of the similarities between the models, the Commission seeks comment on whether their input values are accurate and how the differences between the values may be reconciled. The Commission encourages parties to submit engineering data or other relevant documentation in support of the fill factor that they favor.

48. Dates for Comments on Outside Plant Investment. Interested parties may file comments regarding the design of the outside plant investment components, including the algorithms determining plant mix, installation and cable costs, drop lengths, structure sharing, the fiber-copper cross-over point, digital loop carriers, and the wireless threshold on or before September 24, 1997, and reply comments on or before October 3, 1997. Interested parties may file comments regarding all input values regarding outside plant input investment on or before October 17, 1997, and reply comments on or before October 27, 1997.

iii. Switching

49. Mix of Host, Stand-Alone, and Remote Switches. Switches can be designated as either host switches, stand-alone switches, or remote switches. Both a host switch and a stand-alone switch can provide a full complement of switching services without relying on another switch. A remote switch relies on a host switch to supply a complete array of switching functions and for interconnection with other switches. Proponents of both models claim that they detect no difference in switching costs based on the type of switch used, and therefore their models do not distinguish among the different switch types. A review of

1996 depreciation filings, however, shows that large ILECs are purchasing fewer host switches and more remote switches. Suggesting that choices about switch type could affect the total cost computed more than the models currently suggest, the Joint Board expressed concern that the models did not distinguish among types of switches. The Commission, therefore, tentatively concludes that the selected mechanism should include an algorithm that will place host switches in certain wire centers and remote switches in other wire centers. Based on ILECs' decisions, as revealed in the depreciation filings, to deploy more remote switches, the Commission tentatively concludes that the host-remote arrangement is more cost-effective in many cases than employing stand-alone switches. The Commission seeks comment on this tentative conclusion, and urges parties to provide engineering and cost data to demonstrate the most cost-effective deployment of switches in general and host-remote switching arrangements in particular. The Commission also seeks detailed comment describing how to design an algorithm to predict this deployment pattern. The Commission seeks comment on how to obtain information that would verify or refute the assertion of the models' proponents that there is no cost difference between host switches and remote switches.

50. Capacity Constraints. BCPM does not include any switch capacity limitations, but Hatfield includes a number of switch capacity constraints. The Commission tentatively concludes that the selected mechanism should assign more than one switch to a wire center whenever the mechanism predicts that any one of a set of capacity constraints would be exceeded. The Commission seeks comment on this tentative conclusion and on what capacity constraints the selected mechanism should adopt. Parties are encouraged to provide technical data to support any proposed capacity constraints.

51. Switch Costs. In the Order, the Commission agreed with the state members of the Joint Board that estimating the switching investment cost is a significant unresolved problem of the cost models. Proponents of the models are apparently having difficulty acquiring accurate estimates of switch costs because of the lack of public information on those costs. The Joint Board concluded that the convergence of the models' switch cost estimates should alleviate this lack of information. They urged the Commission and its staff to perform additional analysis and to

obtain more reliable switch cost information.

52. BCPM switching cost estimates are based on the results of a survey of large ILECs that asked ILECs to report the switching costs they use as inputs for ILEC Switching Cost Information System (SCIS) model runs. BCPM model proponents estimated a switching curve based on the answers to the survey. The Hatfield model combines public information and information from other unnamed industry sources to develop switching cost estimates. The model proponents fit a logarithmic curve to three data points to determine the relationship between switch-cost per line and switch-line size. Hatfield reduces the per-line cost of the switch below the logarithmic curve by assuming more efficient use of trunk and line cards.

53. Pursuant to the Joint Board's recommendation, Commission staff examined information regarding switching costs from several sources. The Commission's found data supports the models' assumptions, and imply that the current switching costs of small companies should be higher than the current switching costs of large companies. The Commission, therefore, tentatively concludes that the selected mechanism should incorporate the Commission staff's estimates of switching costs because these estimates are based on filings with the Commission that record actual ILEC switch purchases. The Commission seeks comment on this tentative conclusion. The Commission also seeks comment on whether there is an alternative data source for these costs that would provide a better estimate of the current cost of switches. The Commission also seeks comment on the reasonableness of using the default input values from BCM2, as suggested by Sprint. In addition, the Commission seeks comment on whether it should incorporate the cost of growth lines into their switching cost estimate and, if so, how it should incorporate these costs, and what data sources it should use for the cost of growth lines.

54. Percent of Switch Assigned to Port and to Provision of Universal Service. The models differ with respect to the percentage of switch costs they assign to the port and the percentage of switch costs that is assigned to the provision of universal service. The models divide the switch investment between two basic functions: port and usage. BCPM uses local-usage dial equipment minutes (DEM) to divide switch costs between the costs of providing universal service and the costs of providing all other services. In contrast, Hatfield assigns 30

percent of switch cost to port costs and assigns all of the port costs to the cost of providing universal service. Hatfield further divides the 70 percent of switch cost it assigns to usage between local traffic and toll traffic on the basis of conversation minutes and includes the cost of local traffic in the cost of universal service. The BCPM proponents state that both models could be adjusted so that they assign less than 100 percent of local usage to the provision of universal service, and vary the portion of traffic sensitive access usage assigned to the provision of universal service.

55. The Commission tentatively concludes that switch costs should be divided between line-side port and usage costs. The Commission tentatively concludes, however, not to adopt either of the models' assumptions regarding the percentage of the switch investment that is associated with the port. The Commission seeks comment on these tentative conclusions and on whether it can use the information that ILECs must file in response to their *Access Charge Reform Order* to determine the percentage of the switch investment to be allocated to the port function. The Commission also seeks comment on a reasonable percentage of switch costs to include in the port function.

56. In light of the difficulty in obtaining information on switching costs and the proportion of the switch to be included in the port function, the Commission seeks comment on whether it should undertake a detailed engineering study of several of the large host switches currently being deployed by ILECs (such as the Nortel DMS-100 and the Lucent 5ESS) and associated remote switches and smaller switches (such as the Nortel DMS-10) to ascertain what portions of the switch equipment are associated with the port function. The Commission seeks comment on whether such an engineering study could result in useful information about the portions of switch that are associated with the port function and the costs of that equipment. The Commission also seeks comment on whether alternative data sources are available for the purpose of estimating current switching cost. If so, the Commission seeks comment on how to obtain and use that information. The Commission tentatively concludes that all of the port cost and a percentage of the usage cost are costs of providing universal service. The Commission tentatively concludes that the percentage of the usage cost that should be assigned to the cost of providing universal service should be determined by the amount of local usage included

in the definition of supported services that it will adopt, as a percentage of total usage that the model predicts on the network. The Commission seeks comment on these tentative conclusions.

57. Interested parties may file comments on the platform design relating to switching on or before August 8, 1997, and reply comments on or before August 18, 1997. Interested parties may file comments on the input values relating to switching on or before October 17, 1997, and reply comments on or before October 27, 1997.

iv. Interoffice Trunking, Signaling, and Local Tandem Investment

58. The Commission recognizes two uses for interoffice trunking, signaling, and local tandem facilities: (1) The completion of local calls and (2) transport to an IXC point of presence (POP). Because transport for interexchange service is not a supported service, the selected mechanism will estimate only the cost of interoffice trunking, signaling, and local tandem facilities used for the completion of local calls. BCPM employs a simple multiplier to estimate the portion of total interoffice trunking, signaling, and local tandem costs that should be attributed to supported services. Hatfield treats these facilities on a more disaggregated basis. Both models allow the user to alter the input values to their transport equations. Because interoffice trunking, signaling, and local tandem facilities are an integral part of the network necessary to provide the supported services, the Commission tentatively concludes that the selected mechanism should calculate specific cost estimates for the interoffice elements necessary to provide these functionalities. Because Hatfield's platform design can generate cost estimates at this level of specificity, but BCPM's cannot, the Commission tentatively concludes that only Hatfield's platform is currently adequate in this regard. The Commission seeks comment on this tentative conclusion and on the accuracy of Hatfield's transport algorithm. The Commission also seeks comment on the accuracy of the specific interoffice trunking, signaling, and local tandem input values proposed by Hatfield.

59. Interested parties may file comments concerning design issues on or before August 8, 1997, and reply comments on or before August 18, 1997. Interested parties may file comments on the issues relating to input values on or before October 17, 1997, and reply comments on or before October 27, 1997.

v. General Support Facilities

60. General support facilities (GSF) include the investment and expenses related to vehicles, land, buildings, and general purpose computers. General purpose computers comprise the largest share of the investment and expenses in this category; buildings also comprise a large share. BCPM computes investment in the GSF category for items other than buildings as a percentage of all other plant investment. Building investment is computed as a percentage of switching equipment investment. BCPM sets GSF expenses at a fixed amount per line based on data from its ILEC surveys. Hatfield also segregates some buildings from the GSF category in computing GSF investment but, instead of segregating all buildings as BCPM does, Hatfield only segregates buildings that house switches (i.e., wire center buildings). To compute GSF investment not related to wire center buildings that house switches, Hatfield uses ARMIS data to compute a ratio of ILECs' GSF investment to ILECs' total-plant-in-service investment. This ratio is then applied to the total-plant-in-service investment that the model computes to arrive at the amount of GSF investment not related to wire center buildings. For investment in wire center buildings, Hatfield uses a table of values based on a set number of square feet per switch in use and number of lines served. For GSF expenses, Hatfield uses the ARMIS ratios described above to reach an expense amount. The Commission concluded in their *Access Charge Reform Order* that the current allocation of GSF costs enables ILECs to recover through regulated interstate access charges costs associated with the ILECs' nonregulated billing and collecting functions.

61. The Commission requests comment on the appropriate platform assumptions to compute GSF investment and expenses. The Commission seeks comment on how it may remove costs for nonregulated activities from costs for regulated activities to incorporate the appropriate amount of GSF investment and expenses into a forward-looking mechanism. The Commission also seeks comment on whether a more accurate GSF computation would depend on factors tied to the cost of computers, because much GSF investment and expense is for general purpose computers. Assuming GSF investment is tied more closely to computer costs, the Commission also seeks comment on whether the selected mechanism should account for the increasing use of computers by businesses generally.

Also, because a large share of GSF expense is attributable to the cost of land, the Commission tentatively concludes that GSF expenses should vary by state with reference to differences in land values. The Commission requests comment on this tentative conclusion. Commenters should critique the assumptions regarding GSF investment and expenses that are currently included in BCPM and Hatfield. Commenters advocating a platform that requires an input ratio to calculate GSF expenses should discuss what that input ratio level should be, and provide supporting cost data if possible.

62. Interested parties may file comments regarding GSF issues on or before October 17, 1997, and reply comments on or before October 27, 1997.

vi. Depreciation

63. Economic depreciation measures the periodic reduction in the market value of an asset over time. When calculating depreciation expenses, the models do not simulate the periodic reduction in the market value of the assets. Rather, they use "adjusted projected lives" to recover the current costs of the assets. Under this approach, the annual depreciation charges associated with an asset are computed by dividing the asset's current cost by its adjusted projected life. A shorter life will increase the annual depreciation expense.

64. Commenters disagree on the depreciation rates to be used as inputs to the models. In light of the Commission's conclusion that depreciation should be computed within the range specified in their rules, the Commission tentatively concludes that it should adopt, as an input to their forward-looking cost mechanism, depreciation expenses that reflect a weighted average of the rates authorized for carriers that are required to submit their rates to us. The Commission requests comment on this tentative conclusion. Further, the Commission seeks comment on whether adjusted projected lives should reflect the asset lives of facilities and equipment dedicated to providing only the supported services or whether the asset lives should reflect a decision to replace existing plant with plant that can provide broadband services.

65. As noted in the Order, the Commission intends to issue a notice of proposed rulemaking in the near future to consider changes to the Commission's depreciation rules. The Commission cannot be certain, however, that its new rules will be effective in time for states

to incorporate them in their cost studies, which they must file in February 1998. Accordingly, the Commission tentatively concludes that the Commission should use the range prescribed in the Commission's current rules for purposes of this proceeding, with the understanding that it could adjust the depreciation inputs to their mechanism in light of the outcome of their depreciation rulemaking. The Commission seeks comment on this tentative conclusion, and on whether the states should also be permitted to adjust their cost studies to incorporate any changes to the depreciation rules. In addition, the Commission asks parties to discuss how the inclusion of depreciation rates in the selected mechanism would be affected by changes in the Commission's depreciation rules.

66. Interested parties may file comments on depreciation issues on or before October 17, 1997, and reply comments on or before October 27, 1997.

vii. Expenses

67. BCPM estimates expenses on a per-line basis. These estimates are derived from a survey of ILECs. BCPM permits users to vary expense estimates for small, medium, and large companies, although the default values for BCPM do not vary with company size. In general, Hatfield estimates most expenses based on ARMIS data, expressed as ratios of investment. BCPM estimates total expenses, as detailed above, at \$11.34 per line per month. Hatfield's estimates of total expenses vary based on investment or other costs.

68. The Commission seeks comment on how to establish forward-looking expenses for the selected mechanism. The Commission seeks comment on which expenses should be calculated on a per-line basis, as BCPM does, and which should be calculated as a ratio of investment, as Hatfield does. The Commission tentatively concludes that the selected mechanism should provide the user with the capability to calculate each category of expense based on either line count or other investment, at the user's election, and request comment on this tentative conclusion. The Commission also seeks comment on whether it should forecast expenses and, if so, what forecasting technique it should use. The Commission tentatively concludes that users should be able to use different expense estimates for small, medium, and large companies, as the BCPM allows. The Commission seeks comment on this tentative conclusion. The Commission also seeks comment on whether there are

measures, other than lines and investment to which specific expenses should be tied.

69. The Commission seeks comment on the accuracy of BCPM's default input value of \$11.34 per line, and urge the proponents of BCPM to submit the survey upon which they base their expense inputs. The Commission seeks comment on how this value should vary for small, medium, and large companies. The Commission seeks comment on whether the selected mechanism should use ARMIS data, data from a survey of ILECs, or data from some other source.

70. Plant Specific Expenses. Plant specific expenses include such expenses as maintenance of facilities and equipment expenses. BCPM estimates the following plant specific expenses on a per-line basis: network support (USOA Account 6110); general support (6120); Central Office Equipment (COE) switching (6210); operator systems (6220); COE transmission (6230); information origination/termination (6310); and cable and wire facilities (6410). Hatfield estimates central office switching expenses as a percentage of investment in digital switching equipment, and circuit equipment expense as a percentage of investment for all circuit equipment based on a New England Incremental Cost Study rather than an ARMIS ratio of expenses to investment. Hatfield estimates NID expense as a yearly per-line expense. Hatfield uses separate expense ratios for aerial, buried, and underground cable, while BCPM uses a per-line estimate for cable maintenance that does not vary with the plant mix. Because the two models differ in their listing of plant specific expenses, the two resulting expense estimates may not be comparable. Neither model allows plant specific expenses to vary with climate or soil type.

71. BCPM's default per-line per-month values for plant specific expenses are: network support—\$0.15; general support—\$1.20; COE switching—\$0.34; operator systems—\$0.01; COE transmission—\$0.23; information origination/termination—\$0.07; and cable and wire facilities—\$2.76. Hatfield's default central office switching expense factor is 2.69 percent of digital switching investment. Hatfield's default circuit equipment expense factor is 0.015 percent of circuit equipment investment. Hatfield's default for NID expenses is \$1.00 per line per year. The state Joint Board members recommend that plant specific operating costs be calculated as a percentage of investment, and suggest the following percentages: 3.5 percent

for cable and wire; 2.8 percent for central office switching; and 2 percent for transmission. The state members also recommend the use of nationwide factors that do not vary by company.

72. The Commission seeks comment identifying and discussing the complete set of forward-looking plant-specific expenses for which universal service support should be available, and discussing whether each of these expenses is best estimated on a per-line basis or by some other method. The Commission seeks comment on whether the platforms of BCPM and Hatfield are comparable with respect to their expense assumptions, whether one of the two generates superior expense calculations, or whether expense assumptions of the two should be combined, either in one of the two existing models or in a hybrid model, to estimate expenses most accurately. The Commission seeks comment on what specific input values for each of these expenses should be. In addition, the Commission seeks comment on whether maintenance expense estimates should depend upon plant mix and, in particular, whether an increase in the use of aerial cable also increases maintenance expenses. The Commission also seeks comment on whether plant specific expenses should vary with such characteristics as climate or soil type.

73. Plant Non-Specific Expenses. Plant non-specific expenses include such expenses as engineering, network operations, and power expenses. BCPM estimates the following plant non-specific expenses on a per-line basis: other property plant (USOA Account 6510); network operations (6530); and access (6540). Hatfield calculates network operations expense as a percentage of ARMIS-reported network operations expense. BCPM's default per-line per-month plant non-specific expenses are: other property plant—\$0.03; network operations—\$1.33; and access \$0.00. Hatfield's default value for network operations expense is 50 percent of ARMIS-reported network operations expense. Hatfield contends that this percentage is reasonable because forward-looking network operations expenses are significantly lower than ARMIS-reported expenses for network operations. Hatfield asserts that ARMIS-reported expenses reflect excessive staffing at end offices. The Commission seeks comment on the complete set of forward-looking plant non-specific expenses that should be covered by universal service support, and whether the Commission should estimate each of these expenses on a per-line basis or by some other method. The Commission also seeks comment

discussing what specific input values for each of these expenses should be.

74. Customer Services. Customer services expenses include marketing, billing, and directory listing expenses. BCPM estimates the following customer services expenses on a per-line basis: marketing (USOA Account 6610) and services (6620). Hatfield estimates the cost of bill generation and billing inquiries for end users as a fixed, per-line expense. Hatfield includes a per-line directory listing expense and assigns local number portability expenses on a per-line basis. Hatfield also assigns carrier-to-carrier customer service expenses (associated with the provision of unbundled network elements) on a per-line basis. Hatfield excludes marketing (USOA Account 6610) entirely. BCPM's per-line per-month default values for customer services expenses are: marketing—\$0.35 and services—\$2.42. State Joint Board members suggest that BCPM's services expenses should be reduced 29 percent to \$1.75 to exclude operator services and directory assistance. They also recommend excluding marketing expenses from the cost of supported services. Hatfield's default per-line customer service expenses, which are based on ARMIS data, are: billing—\$1.22 per month; directory listing—\$0.15 per month; local number portability—\$0.25 per month; and carrier-carrier customer service—\$1.69 per month. The Commission seeks comment identifying and discussing the complete set of forward-looking customer service expenses that should be covered by universal service support, and whether each of these expenses is best estimated on a per-line basis or by some other method. The Commission also seeks comment on specific input values for each of these expenses.

75. Corporate Operations. Corporate operations expenses include general, administrative, human resources, legal, and accounting expenses. BCPM estimates the following corporate operations expenses on a per-line basis: executive and planning (USOA Account 6710); general and administrative (6720); and uncollectibles (6790). Hatfield estimates corporate overhead expense as a percentage of total capital costs and operations expenses. BCPM's per-line per-month default input values for corporate operations expenses are: executive and planning—\$0.14; general and administrative—\$2.15; and uncollectibles—\$0.17. Hatfield's default corporate overhead expense is 10.4 percent of the total of capital costs and operations expenses. The Commission seeks comment identifying and discussing the complete set of forward-

looking corporate operations expenses that should receive universal service support, and whether each of these expenses is best estimated on a per-line basis or by some other method. The Commission seeks comment on what the specific input values for each of these expenses should be.

viii. Other

76. Interested parties may file comments on the issues relating to expenses on or before October 17, 1997, and reply comments on or before October 27, 1997.

77. The Commission also seeks comment on any other issues related to the platform and inputs to the forward-looking cost models that are currently under consideration. Any such comments should be supported by specific data and analysis of the models. The Commission seeks comment on whether it should develop a method to adjust the costs estimated by their cost mechanism on an annual basis, and if so how it should do so. The Commission seeks comment on whether the adjustment mechanism should be tied to inflation and include an offset similar to their price cap mechanisms. Alternatively, the Commission seeks comment on whether it should use the actual cost estimates provided by the selected mechanism for a fixed number of years, and re-evaluate and modify the mechanism at the end of that period. Interested parties may file comments on these issues on or before October 17, 1997, and reply comments on or before October 27, 1997.

C. Support Area

78. A support area is the geographic area used to determine universal service support levels. The support area need not be the same as the geographic area used by the selected mechanism to calculate the cost of providing the supported services. The support area may be an aggregation of those geographic areas used to determine cost. For example, Hatfield uses CBGs to determine cost and density zones, which are an aggregation of CBGs with similar line densities, to calculate support. In the Order, the Commission concluded that support areas should be no larger than wire centers. While the Commission agreed with the Joint Board that the use of smaller support areas would allow for better targeting of support and minimize the possibility of "cream-skimming," the Commission was uncertain that any mechanism that it could adopt would accurately predict the number of customers in such small areas.

79. To determine the level of support a particular carrier should receive, the Commission must know the number of lines in the support area. Carriers currently do not associate lines with a particular CBG, CB, or grid cell. They do, however, keep records of the number of lines served by each wire center. The Commission seeks comment on whether it should provide support according to geographic areas other than the geographic areas used to calculate cost. The Commission tentatively concludes that the ability of carriers to associate lines with CBGs, or other small areas will determine how the Commission defines support areas in the future. The Commission seeks comment on the feasibility of geo-coding households, as proposed by SBC and Sprint. Interested parties may file comments on these issues on or before October 17, 1997, and reply comments on or before October 27, 1997.

II. Support for Local Usage

80. The Joint Board recommended that support for voice-grade access to the public switched network should include a local usage component. In the Order, the Commission agreed with the Joint Board that the Commission should determine the measure of local usage to be supported by federal universal service mechanisms. The Commission concluded that "consumers might not receive the benefits of universal service support unless we determine a minimum amount of local usage that must be included within the supported services" because carriers receiving universal service support might charge high per-minute rates that prevent service from being affordable. The Commission also observed that, unless the definition of universal service includes a usage component, carriers using technologies (such as wireless) that can provide basic access relatively inexpensively but that entail higher usage-based costs would have an artificial advantage over carriers using technologies that have higher basic access costs and lower usage-based costs.

81. The Commission tentatively concludes that a local usage component should be included in the definition of universal service to ensure that customers realize the benefits of universal service support even if they cannot afford high per-minute charges. Failing to include a local usage component in the definition of universal service would create a bias in favor of carriers (such as wireless carriers) that provide service with facilities that allow relatively inexpensive access to the network but that have higher usage

costs. This bias would be exacerbated if the Commission later set support levels using competitive bidding. Carriers able to provide relatively inexpensive access could underbid competitors, yet customers might not receive affordable service because of high usage-based charges.

82. The Commission seeks comment on the level of local usage that should be included. The Commission could prescribe this level to be the number of minutes per month used by the average customer subscribing to flat-rate local service. Alternatively, the Commission could define the level as the product of the average number of calls that are included in carriers' measured-rate service and the average call length. The Commission seeks comment on other potential ways to calculate the local usage component. The Commission also seeks comment on whether it should consider the impact of increased Internet usage on average call length and, if so, how. Finally, the Commission requests comment on whether the local usage component should differ for residential and business service. Commenters submitting usage data are requested to segregate those data between residential and business users.

83. The Commission also seeks comment on the connection, if any, between the amount of usage that the models assume to determine specifications such as switch size and average cost per minute, and the amount of usage that should be supported as part of the definition of universal service. The Commission tentatively concludes that no necessary connection exists between these two measures of usage because they serve different purposes within the support mechanisms. For example, Hatfield currently determines per-minute switched cost based on all usage (local and toll), but determines support based only on local usage. Similarly, the Commission tentatively concludes that the forward-looking economic cost methodology that it will employ should consider all local usage to determine switching capacity and to compute average cost per minute, and that it should determine the amount of local service to include in the definition of universal service without regard to these other measures of usage. Interested parties may file comments on all of the issues relating to the level of local usage on or before October 17, 1997, and reply comments on or before October 27, 1997.

Procedural Matters

III. Ex Parte Presentations

84. This is a non-restricted notice-and-comment rulemaking proceeding. Ex parte presentations are permitted, except during the Sunshine Agenda period, provided that they are disclosed as provided in the Commission's rules. See generally 47 CFR 1.1202, 1.1203, 1.1206.

IV. Initial Regulatory Flexibility Act Certification

85. Section 603 of the Regulatory Flexibility Act (RFA) ¹ requires an Initial Regulatory Flexibility Analysis (IRFA) in notice and comment rulemaking proceedings, unless the Commission certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities." ² It further requires that the IRFA describe the impact of the proposed rule on small entities. The RFA generally defines "small entity" as having the same meaning as the term "small business concern" under the Small Business Act, 15 U.S.C. 632. ³ The Small Business Administration (SBA) defines a "small business concern" as one that "(1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) meets any additional criteria established by the SBA." ⁴ Section 121.201 of the Small Business Administration regulations defines a small telecommunications entity in SIC code 4813 (Telephone Companies Except Radio Telephone) as any entity with 1,500 or fewer employees at the holding company level. ⁵ The Commission has determined that the RFA is inapplicable to this FNPRM because the non-rural LECs affected by the proceeding do not meet these criteria.

86. The Commission has not adopted a definition of a "small LEC." Out of an abundance of caution, however, the

Commission did include rural LECs in the regulatory flexibility analysis accompanying the Order as if rural LECs fell within the definition of "small entity" for regulatory flexibility purposes. ⁶ The Commission notes that the term "rural" LEC, which is statutorily defined, is based on the population density of and number of access lines in the area served. ⁷ For purposes of this certification, however, the Commission need not make a conclusive finding on whether the rural LECs are small entities for purposes of the RFA, for even if rural LECs were "small entities" under the RFA, the Commission would still certify that no regulatory flexibility analysis is necessary because none of the proposals in the FNPRM, if adopted, would affect rural LECs. This FNPRM seeks comment only on the mechanisms the Commission should use to estimate the forward-looking economic costs that non-rural LECs would incur to provide universal service in rural, high cost and insular areas. In this FNPRM, the Commission does not consider or adopt a forward-looking economic cost mechanism for rural LECs. As discussed in the Final Regulatory Flexibility Analysis in the Order, the Commission has permitted rural carriers to shift to a forward-looking economic cost mechanism more gradually than larger carriers. ⁸

87. The Commission therefore certifies, pursuant to section 605(b) of the RFA, that these proposals would not have significant economic impact on a substantial number of small entities. ⁹ The Commission will send a copy of this Certification, along with this FNPRM, in a report to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996, 5 U.S.C. 801(a)(1)(A), and to the Chief Counsel for Advocacy of The Small Business Administration, 5 U.S.C. 605(b). A copy of this initial certification will also be published in the **Federal Register**.

C. Deadlines and Instructions for Filing Comments

88. Pursuant to applicable procedures set forth in §§ 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415 and 1.419, interested parties may file comments concerning the platform designs of the switching, interoffice trunking, signaling, and local tandem

components must be submitted on or before August 8, 1997, and parties should submit corresponding reply comments on or before August 18, 1997. Comments concerning the platform design features determining customer location, including the geographic unit for cost calculations and the algorithm measuring customer distribution and line counts, on or before September 2, 1997, and reply comments regarding these components should be submitted on or before September 10, 1997. Comments discussing the platform-design issues relating to outside plant investment, including the algorithms determining plant mix, installation and cable costs, drop lengths, structure sharing, the fiber-copper cross-over point, digital loop carriers, and the wireless threshold must be submitted on or before September 24, 1997, with reply comments submitted on or before October 3, 1997. Comments discussing all platform issues not otherwise addressed, including the components addressing general support facilities, expenses, and support areas, and all input values issues must be submitted by October 17, 1997, with reply comments due on or before October 27, 1997.

89. The Commission directs all interested parties to include the name of the filing party and the date of the filing on each page of their comments and reply comments. Comments and reply comments also must clearly identify the specific portion of this Further Notice of Proposed Rulemaking to which a particular comment or set of comments is responsive. If a portion of a party's comments does not fall under a particular topic listed in the outline of this Notice, such comments must be included in a clearly labelled section at the beginning or end of the filing. Irrespective of the length of their comments or reply comments, parties shall include a table of contents in their documents. ¹⁰

90. Parties should send their comments or reply comments to Office of the Secretary, Federal Communications Commission, 1919 M Street, N.W., Room 222, Washington, D.C. 20554. Parties should also file one copy of any documents filed in this docket with the Commission's copy contractor, International Transcription Services, Inc., 1231 20th Street, N.W., Washington, D.C. 20036. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center, 1919 M Street, N.W., Room 239, Washington, D.C. 20554. Commenters

¹ See 5 U.S.C. 601 *et seq.* The RFA was amended by the "Small Business Regulatory Enforcement Fairness Act of 1996" (SBREFA), Title II of the Contract with America Advancement Act of 1996, Public Law 104-121, 110 Stat. 847 (1996) (CWAAA).

² 5 U.S.C. 605(b).

³ 5 U.S.C. 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. 632). Pursuant to 5 U.S.C. 601(3), the statutory definition of 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 definitions in the **Federal Register**."

⁴ 15 U.S.C. 632.

⁵ 13 CFR 121.201.

⁶ Order at paras. 885, 892, 944-50. See also 13 CFR 121.902(b)(4).

⁷ We define "rural" as those carriers that meet the statutory definition of a "rural telephone company" set forth at 47 U.S.C. 153(37).

⁸ Order at paras. 885, 944-50.

⁹ 47 U.S.C. 605(b).

¹⁰ Cf. 47 CFR § 1.49(b).

may also file informal comments or an exact copy of formal comments electronically via the Internet at <<http://gulfoss.fcc.gov/cgi-bin/websql/cgi-bin/comment/comment.hts>>. Only one copy of electronically-filed comments must be submitted. A commenter must note whether an electronic submission is an exact copy of formal comments on the subject line. A commenter also must include its full name and Postal Service mailing address in its submission. Parties are also asked to submit their comments and reply comments on diskette. Such diskette submissions are in addition to and not a substitute for the formal filing requirements addressed above. Parties submitting diskettes should submit them to Sheryl Todd of the Common Carrier Bureau, 2100 M Street, N.W., Room 8611, Washington, D.C. 20554. Such a submission should be on a 3.5 inch diskette formatted in an IBM compatible form using WordPerfect 5.1 for Windows or compatible software. The diskette should be submitted in "read only" mode. The diskette should be clearly labelled with the party's name, proceeding, type of pleading (comment or reply comments) and date of submission. Each diskette should contain only one party's comments in a single electronic file. The diskette should be accompanied by a cover letter.

Ordering Clauses

91. It is ordered, pursuant to Sections 1, 4(i) and (j), and 254 of the Communications Act as amended, 47 U.S.C. §§ 151, 154(i), 151(j), and 254, that the Further Notice of Proposed Rulemaking is hereby adopted and comments are requested as described above.

92. It is further ordered, pursuant to §§ 0.91 and 0.291 of the Commission's rules, 47 CFR 0.91, 0.291, that authority is delegated to the Common Carrier Bureau to issue orders in this proceeding directing model proponents to make certain changes in their models in order for those models to remain under consideration in this proceeding.

List of Subjects

47 CFR Part 54

Universal service.

47 CFR Part 69

Communications common carriers.

Federal Communications Commission.

William F. Caton,
Acting Secretary.

Attachment A, Service List

The Honorable Reed E. Hundt, Chairman,
Federal Communications Commission,

1919 M Street, NW., Room 814,
Washington, DC 20554
The Honorable Rachelle B. Chong,
Commissioner, Federal Communications
Commission, 1919 M Street, NW., Room
844, Washington, DC 20554
The Honorable Susan Ness, Commissioner,
Federal Communications Commission,
1919 M Street, NW., Room 832,
Washington, DC 20554
The Honorable James H. Quello,
Commissioner, Federal Communications
Commission, 1919 M Street, NW., Room
802, Washington, DC 20554
The Honorable Julia Johnson, State Chair,
Chairman, Florida Public Service
Commission, 2540 Shumard Oak Blvd.,
Gerald Gunter Building, Tallahassee, FL
32399-0850
The Honorable David Baker, Commissioner,
Georgia Public Service Commission, 244
Washington Street, SW., Atlanta, GA
30334-5701
The Honorable Sharon L. Nelson, Chairman,
Washington Utilities and Transportation
Commission, 1300 South Evergreen Park
Dr. SW., P.O. Box 47250, Olympia, WA
98504-7250
The Honorable Laska Schoenfelder,
Commissioner, South Dakota Public
Utilities Commission, State Capitol, 500
East Capitol Street, Pierre, SD 57501-5070
Martha S. Hogerty, Missouri Office of Public
Council, 301 West High Street, Suite 250,
P.O. Box 7800, Jefferson City, MO 65102
Tom Boasberg, Federal Communications
Commission, Office of the Chairman, 1919
M Street, NW., Room 814, Washington, DC
20554
Charles Bolle, South Dakota Public Utilities
Commission, State Capitol, 500 East
Capitol Street, Pierre, SD 57501-5070
Deonne Bruning, Nebraska Public Service
Commission, 300 The Atrium, 1200 N
Street, P.O. Box 94927, Lincoln, NE 68509-
4927
James Casserly, Federal Communications
Commission, Commissioner Ness's Office,
1919 M Street, NW., Room 832,
Washington, DC 20554
Rowland Curry, Texas Public Utility
Commission, 1701 North Congress Avenue,
P.O. Box 13326, Austin, TX 78701
Bridget Duff, State Staff Chair, Florida Public
Service Commission, 2540 Shumard Oak
Blvd., Tallahassee, FL 32399-0866
Kathleen Franco, Federal Communications
Commission, Commissioner Chong's
Office, 1919 M Street, NW., Room 844,
Washington, DC 20554
Paul Gallant, Commissioner Quello's Office,
Federal Communications Commission,
1919 M Street, NW., Room 802,
Washington, DC 20554
Emily Hoffnar, Federal Staff Chair, Federal
Communications Commission, Accounting
and Audits Division, Universal Service
Branch, 2100 M Street, NW., Room 8617,
Washington, DC 20554
Lori Kenyon, Alaska Public Utilities
Commission, 1016 West Sixth Avenue,
Suite 400, Anchorage, AK 99501
Debra M. Kriete, Pennsylvania Public
Utilities Commission, North Office
Building, Room 110, Commonwealth and
North Avenues, P.O. Box 3265, Harrisburg,
PA 17105-3265

Sandra Makeeff, Iowa Utilities Board, Lucas
State Office Building, Des Moines, IA
50319
Philip F. McClelland, Pennsylvania Office of
Consumer Advocate, 1425 Strawberry
Square, Harrisburg, PA 17120
Thor Nelson, Colorado Office of Consumer
Counsel, 1580 Logan Street, Suite 610,
Denver, CO 80203
Barry Payne, Indiana Office of the Consumer
Counsel, 100 North Senate Avenue, Room
N501, Indianapolis, IN 46204-2208
Timothy Peterson, Deputy Division Chief,
Federal Communications Commission,
Accounting and Audits Division, 2100 M
Street, NW., Room 8613, Washington, DC
20554
James Bradford Ramsay, National Association
of Regulatory Utility Commissioners, 1100
Pennsylvania Ave., NW., P.O. Box 684,
Washington, DC 20044-0684
Brian Roberts, California Public Utilities
Commission, 505 Van Ness Avenue, San
Francisco, CA 94102
Kevin Schwenzfeier, NYS Dept of Public
Service, 3 Empire State Plaza, Albany, NY
12223
Tiane Sommer, Georgia Public Service
Commission, 244 Washington Street, SW.,
Atlanta, GA 30334-5701
Sheryl Todd (plus 8 copies), Federal
Communications Commission, Accounting
and Audits Division, Universal Service
Branch, 2100 M Street, NW., Room 8611,
Washington, DC 20554

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DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Parts 571 and 572

[Docket No. 74-14; Notice 120]

RIN 2127-AG39

Anthropomorphic Test Dummy; Occupant Crash Protection

AGENCY: National Highway Traffic
Safety Administration (NHTSA), DOT.

ACTION: Notice of Proposed Rulemaking
(NPRM).

SUMMARY: This document proposes modifications to the Hybrid III test dummy, which is specified by the agency for use in compliance testing under Standard No. 208, *Occupant crash protection*. The agency is proposing minor modifications to the test dummy's clothing and shoes and to the hole diameter in the femur flange in the pelvis bone flesh. The changes would facilitate compliance testing, while having practically no effect on Standard No. 208 test results.

DATES: Comments must be received by
October 6, 1997.