



# **Alternative Mechanisms for Sizing A Universal Service Fund for Rural Telephone Companies**

Rural Task Force  
White Paper 3  
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<http://www.wutc.wa.gov/rtf>

The Rural Task Force is an independent advisory panel appointed by the Federal – State Joint Board on Universal Service to provide guidance on universal service issues affecting rural telephone companies. Opinions expressed in this White Paper are the collective view of the Rural Task Force membership and are not intended to represent the views of organizations to which each member is affiliated or those of the FCC or the Joint Board on Universal Service.

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# **Rural Task Force White Paper 3**

## **Alternative Mechanisms for Sizing A Universal Service Fund for Rural Telephone Companies**

### **I Introduction**

In its Mission Statement the Rural Task Force (Task Force or RTF) made a commitment to explore alternative mechanisms for determining the amount of universal service support for Rural Telephone Companies (Rural Carriers, or RTCs).<sup>1</sup> White Paper 3 documents the RTF's review of numerous alternative mechanisms for determining the amount of support. The paper begins with a discussion of Task Force criteria for determining an appropriate universal service support mechanism for Rural Carriers and the areas they serve. The main body of the paper describes the alternative mechanisms examined and provides a brief analytical review of each of these mechanisms.

White Paper 3 is part of a series prepared by the RTF. White Paper 1 outlined the policy and legal framework of universal service support and explained why universal service mechanisms and policies for Rural Carriers may be appropriately different than for non-Rural Carriers.<sup>2</sup> White Paper 2 factually documented differences between Rural Carriers and non-Rural Carriers and among Rural Carriers themselves.<sup>3</sup> As the RTF moves toward completion of its work, additional White Papers are being drafted which analyze competitive issues in areas

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<sup>1</sup> See Rural Task Force, Mission Statement, December 1998, available under "All Documents/Strategies" at the RTF web page, <http://www.wutc.wa.gov/rtf>.

<sup>2</sup> See Rural Task Force White Paper 1: Mission and Purpose, September 1999, available at <http://www.wutc.wa.gov/rtf>.

<sup>3</sup> See Rural Task Force White Paper 2: The Rural Difference, January 2000, available at <http://www.wutc.wa.gov/rtf>.

served by Rural Carriers, and the federal Synthesis (SYN) model adopted for sizing the universal service fund for non-Rural Carriers.

## **II Criteria for an Appropriate Mechanism for Determining the Size of a Universal Service Fund for Rural Telephone Companies**

The recommendations of the Rural Task Force must comply with the Telecommunications Act of 1996 (1996 Act), not only with regard to the universal service principles of Section 254, but also with the 1996 Act's goal of extending the benefits of competitive telecommunications markets to rural and insular areas. The Task Force has specific objectives for a mechanism for sizing a universal service fund for Rural Carriers. Following the course the Task Force set for itself in its Mission Statement, these criteria are not simple restatements of the universal service principles.<sup>4</sup> They combine the universal service principles with the tenets of technological and competitive neutrality, network evolvability, and economic and administrative workability.<sup>5</sup>

The Task Force criteria for an appropriate mechanism for determining the size of a universal service fund for Rural Telephone Companies may be summarized as follows:

- 1. Sufficiency:** Does the mechanism ensure comparability of service and rates between urban or suburban customers and rural or insular customers?
- 2. Affordability:** Does the mechanism enable providers to offer the supported services in an affordable manner?

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<sup>4</sup> See Mission Statement of the Rural Task Force, December, 1998.

<sup>5</sup> See Criteria to Determine if the Final Universal Service Support Mechanism for RTCs is Reasonable available at "All Documents/Strategies" at <http://www.wutc.wa.gov/rtf>.

3. **Competition:** Does the mechanism accommodate competition by precisely targeting support to high-cost customers?
4. **Flexibility:** Is the mechanism able to evolve as new technologies are introduced, as competition develops, and as the definition of universal services changes over time?
5. **Protection:** Does the mechanism prevent degradation of the existing infrastructure and the current level of service?
6. **Portability:** Can the mechanism provide all eligible telecommunications carriers (ETCs) an appropriate amount of support in a competitively neutral manner?
7. **Predictability:** Does the mechanism enable a competitor or incumbent carrier to determine in advance the amount of support it will receive on behalf of a customer?
8. **Practicality:** Is the mechanism economically and administratively workable?

In reviewing the different alternative mechanisms set forth below, the Task Force has attempted to apply these criteria to each alternative.

### **III Description of Alternative Mechanisms for Sizing a Universal Service Fund for Rural Telephone Companies**

Simply stated, a support mechanism consists of a series of policy decisions that determine if universal service support is necessary in a particular area, and if so, how much. These policy decisions involve the overall size of the fund available for support, how costs are determined, what benchmark should be used, the size of the area over which costs are averaged, and whether support should be disaggregated. Several support mechanisms utilize computer models to

produce forward-looking costs. While these models are a source of study in their own right,<sup>6</sup> they constitute only a part of an overall support mechanism. For example, support mechanisms using exactly the same forward-looking cost model and inputs could produce different levels of support for the same area based on decisions made on other policy matters, such as the area over which costs are averaged, or selection of the benchmark.<sup>7</sup>

Set forth below are several different support mechanisms which were discussed by the Rural Task Force. No single support mechanism is perfect: each has inherent strengths and weaknesses. The remainder of this White Paper will present a brief discussion of each support mechanism, followed by a short listing of strengths and weaknesses for that support system. Neither the listing of support mechanisms nor the listing of strengths and weaknesses is intended to be exhaustive.

### **A. The Current Rural Support Mechanism (also referred to as the “Embedded Cost” Mechanism)**

The current method of federal universal service support for Rural Carriers is based on the embedded costs of each incumbent phone company. In other words, support is based on the reported investment and expenses of each company. There are three forms of support currently flowing to Rural Carriers:

- The High Cost Fund helps offset the cost of loop facilities used to provide access to the network. When a carrier’s average loop cost exceeds 115 percent of the national

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<sup>6</sup> Rural Task Force pending White Paper 4 is an in-depth look at the FCC’s forward-looking cost model, the Synthesis Model, as applied to Rural Carriers.

<sup>7</sup> Although all of the mechanisms attempt to determine an amount of support available for each access line in a serving area, many of the mechanisms employ large-scale averaging of costs. A discussion of the problems inherent in averaging is presented in the Appendix.

average loop cost, that carrier receives a portion of its excess costs from the fund.

The amount of support increases in specified steps as the percentage of excess cost rises.

- Long-Term Support (LTS) helps offset the cost of interstate access for Rural Carriers remaining in the National Exchange Carrier Association (NECA) pool.
- Local Switching Support (formerly known as Dial Equipment Minutes (DEM) Weighting) provides support for the high per-line local switching equipment costs incurred by carriers with less than 50,000 lines.

These three funds currently provide approximately \$1.5 billion in annual support to the over 1,300 Rural Carrier study areas in the United States and its territories.<sup>8</sup> Each form of support is determined by averaging costs over the company's entire study area. (LTS is averaged over all companies participating in the NECA common line pool.) Per line support is determined by dividing total support by the total number of lines within a study area.

The total amount of the High Cost Fund available for Rural Carriers is currently capped. Under the cap, overall high cost support grows at the same rate as the growth in the number of access lines, including the lines of non-Rural Carriers. It is estimated that without the cap, the High Cost Fund for Rural Carriers would be approximately \$83.9 million higher.<sup>9</sup> The Rural Task Force studied the characteristics and operation of the current support system as a benchmark for comparison of all other support mechanisms.

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<sup>8</sup> A "study area" is generally the entire territory served by a telephone company within a single state.

## 1. Strengths

- (a) The current mechanism has a record of successful performance. The current rural support mechanism has been in operation for almost 16 years, and has helped underwrite many of the gains toward the goal of universal service. It is a known and predictable mechanism that has demonstrated the ability to provide sufficient universal service over the long term,<sup>10</sup> and to produce reasonably comparable rates throughout the nation.
- (b) The current mechanism is relatively easy to administer. Because it is based on accounting costs which must be kept according to the Uniform System of Accounts, the current system of support is relatively easy to administer and audit. As stated above, the current system has been in place for a number of years, and is familiar to Rural Carriers and competitors alike.
- (c) The current mechanism provides incentives to invest. The current mechanism provides incentives for a Rural Carrier to invest in the modernization of its telecommunications plant. It can be viewed as being technologically neutral if it supports expenditures for wireline and wireless facilities to serve customers. It has enabled small carriers to provide new technologies at the same time those technologies were being introduced in urban areas.
- (d) Support is based on “real world” costs incurred in providing services. By using the costs actually incurred by incumbent local exchange carriers (ILECs) in building the network and

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<sup>9</sup> In addition to the cap on the growth of the High Cost Fund, there are caps on recovery of corporate operations expense and caps on universal service funds related to newly acquired exchanges. It is estimated that removal of the corporate operations expense cap would increase the fund for Rural Carriers by \$34.5 million, and that removal of the cap on acquired exchanges would increase the fund by \$12.8 million. *Universal Service Fund 1999 Submission*, NECA (Oct. 1, 1999).

<sup>10</sup> Many parties believe that the caps on support imposed by the FCC have hindered the ability of Rural Carriers to upgrade their networks and provide advanced services. Other parties maintain that the caps have not hindered the provision of advanced services. Several requests to lift the caps are currently pending before the FCC.

providing service, the current mechanism fully recognizes varying geographic conditions, weather conditions, changing labor and material markets, changing market demand conditions, regulatory service requirements, the uncertainties in building facilities to meet projected long-term demand and other factors that are encountered in constructing and maintaining a telecommunications network.

## **2. Weaknesses**

- (a) Support based on embedded costs might not be sufficient for a competitive ETC. Under the current support system, a competitive ETC entering an area served by an ILEC would receive support based on the embedded cost of the ILEC. That embedded cost might be very low, because of inflationary effects, because the plant was built a number of years ago when construction costs were less, or was built to performance standards that are out of date. Support based on embedded costs in such circumstances could mean that a competitor has little incentive to enter the area.
- (b) Support based on embedded costs could provide more support than necessary. Because support under the current mechanism is based on the past investment decisions of the incumbent, the current cost of service may be higher than that of a competitor using a different technology. The resulting support amount for both the incumbent and the competitor may be more than necessary to ensure comparability in rates and services between urban and rural areas.
- (c) The current mechanism does not target support. Support under the current system is based on average customer costs within the local exchange carrier's study area. Study areas served by Rural Carriers vary widely, from small areas which are entirely rural, to large areas

including large towns or smaller cities. Large scale averaging of costs under the current system means that the actual cost to serve a particular area or wire center is not explicitly known. Under the current mechanism, a customer fifty feet from the central office switch has the same apparent cost-to-serve as a customer fifty miles from the central office. The per-line support the carrier receives for serving each of those customers is the same, even though the costs to serve each customer vary greatly.

- (d) Support may rise as incumbents lose customers to competitors. Current support is based on the ILEC's costs and investments averaged over total lines served by the ILEC. The vast majority of those costs may remain even if the ILEC loses customers to competitors. As a result, competitive losses may result in an increase in per line support for both the ILEC and the competitive ETC, increasing the overall size of the fund.

## **B. Modifications to the Embedded Cost Mechanism**

The Rural Task Force has considered two major modifications to the current support mechanism. Each of these modifications would continue to use embedded costs and the various benchmarks applicable to each fund; however, the following changes would be made to address weaknesses in the current support mechanism.

- **The caps on the universal service funding for Rural Carriers would be eliminated.**

Under this modification the existing indexed cap on high cost support, the individual funding caps now associated with exchange mergers and acquisitions, and the corporate operations expense limitation as applied to RTCs, would be eliminated. Based on funding for the year 2000, removal of the caps would increase universal service support by approximately \$132 million.

- **Universal service support would be disaggregated in order to target funds to high cost areas.**

Per line support under the current support mechanism is determined through averaging of all costs across all subscribers in some area, which is usually the study area. The average per line support derived in this manner may have little relation to the actual cost to serve a particular area. Disaggregating costs allows support to be targeted to the most rural and high cost zones.

Disaggregation could be achieved by the following methods, among others:

- Rural Carriers could identify their high cost zones, to be fixed for a number of years set by the federal or state regulator.
- A proxy cost model could be used to establish high cost areas, as is currently being done in the state of Washington.
- Concentric cost zone circles could be drawn from the wire center of the exchange or some other central point.<sup>11</sup>

Under any method of disaggregation, the total amount of support flowing to a study area would not be greater than indicated by the current support mechanism. Disaggregation would

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<sup>11</sup> It should be noted that this method of establishing high cost zones, while administratively convenient, takes into consideration only one causative factor in high cost, namely, distance. As a result, this method of disaggregation is probably not as accurate as the other two methods discussed. The RTF has not reached consensus on any particular method of disaggregation and is continuing to study the issue.

merely allow the support to be targeted in a manner more closely aligned with cost-based principles.

## 1. Strengths

- (a) Basing support on embedded costs reduces the risk that support might not be sufficient. The continued use of embedded costs helps Rural Carriers to recover investments made to provide universal services to their customers. Section 254 requires that support be both sufficient and predictable. Removal of the caps would remove a disincentive to the upgrade and rationalization of the networks of Rural Carriers, and would ensure that support is sufficient.<sup>12</sup>
- (b) Basing support on embedded cost provides incentive for investment. Pricing and support based on embedded cost maintains the connection between investment and support. This connection provides a carrier with incentives to invest in its network, although not necessarily in the most rural areas (due to cost averaging). Providing this connection is a strength of any mechanism relying on embedded cost to determine support amounts.
- (c) Disaggregation allows support to be targeted. Disaggregation reduces the problems associated with large scale averaging of costs. The level of disaggregation – wire center, cost zone, cluster - may be changed over time as competition actually develops in an area.

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<sup>12</sup> Some parties contend that when the NECA pool members' costs exceeded the indexed cap in the second quarter of 1997, universal service support became insufficient to preserve and advance universal service in violation of Section 254(b)(5) of the 1996 Act.

## 2. Weaknesses

- (a) Support would be based on investment of incumbent. In areas where an incumbent has old plant with little book value, the mechanism may not provide adequate support for modernization either by the incumbent or competitors.
- (b) Removal of the cap on acquired exchanges could increase the size of the fund. Differences between the mechanisms for non-Rural Carriers and Rural Carriers may result in increased amounts of universal service support for study areas or exchanges that move from one system to the other. If a Rural Carrier acquires an exchange previously owned by a non-Rural Carrier, the result is likely to be an overall increase in the amount of universal service support available under the Rural Carrier method. Removal of the caps on acquired exchanges could therefore cause the fund to increase. In addition, removal of the caps on acquired exchanges could allow the amount of support to influence the purchase price of exchanges.
- (c) Disaggregation of embedded support could be administratively complex. Because most Rural Carriers do not currently record loop costs on a wire center or cost zone basis, disaggregation of these costs may require substantial effort on the part of carriers and regulatory authorities.

### C. Competitive Bidding

Competitive bidding for general use was proposed as a universal service support mechanism in the Federal Communications Commission's (FCC) March 6, 1996 Notice of

Proposed Rulemaking in the universal service proceeding.<sup>13</sup> The form considered by the Rural Task Force is taken from the November 8, 1996 Recommended Decision of the Federal-State Joint Board on Universal Service.<sup>14</sup> Competitive bidding assumes that there is one or more ETC interested in serving an area. Bidding would be used to find the minimum level of universal service support necessary to induce a carrier to serve each area. A specialized form of competitive bidding for use where no ETC has expressed an interest in serving the area will be discussed in the next section.

Competitive bidding would work as follows. A statement of work would be issued detailing the service requirements of the specified area. The service requirements would, at a minimum, be the set of supported services within the definition of universal service. Maximum rates and charges could be specified in the statement of work. Bidders would submit the amount above maximum rates they would accept in order to provide service. All bids could be rejected if the bidding official (state or federal regulatory commission or system administrator) deemed them to be unacceptable. The successful bidder would receive the low bid reward for a set time, such as three years, after which support for the area would be rebid. The low bidder would not have a guarantee of revenues beyond that time.

## **1. Strengths**

- (a) Bidding might reduce the cost of supporting universal service. After reviewing the many public comments filed on competitive bidding in 1996, the Federal-State Joint Board on Universal Service concluded that competitive bidding “could reduce the amount of overall

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<sup>13</sup> See In re: Federal-State Joint Board on Universal Service, *Notice of Proposed Rulemaking*, CC Docket No. 96-45 (March 6, 1996), paragraph 35.

support needed for universal service” if properly structured.<sup>15</sup> There was not public consensus on how to structure competitive bidding to make it reduce the overall amount of support, and one commenter expressed concern that care should be taken to structure the bidding system “so that the total funding level would not increase over that of today.”<sup>16</sup>

- (b) Support would be predictable and sufficient. Since the level of support would be based on the winning bidder’s own bid, the amount of support during the period of the contract would be explicitly known and presumably sufficient.

## 2. Weaknesses

- (a) Support would not be predictable over the long term. After the expiration of the contract period, support for the area would be re-auctioned. In the second auction, the first round low bidder, who may have made long-term investments in plant to serve a rural area, could only retain its revenues if it submitted a successful bid again. This kind of uncertainty would not provide incentives for efficient, long-term investment strategies that are necessary in low density, high cost areas.
- (b) Success is completely dependent upon an exact statement of work. In any competitive fixed-price bidding situation, the success of the contract will depend entirely upon the quality of the purchaser’s statement of work which is the basis of the bidder’s proposal. The FCC has defined the supported services, which would serve as the basis for this statement of work. Since services beyond that definition are not defined as supported services, the ability to evolve to advanced services capability would be in doubt.

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<sup>14</sup> See Federal-State Joint Board on Universal Service Recommended Decision, November 6, 1996, beginning at paragraph 318.

<sup>15</sup> Ibid, at paragraph 343.

- (c) Enforcement of service standards could be difficult. In any competitively bid contract, the purchaser has to enforce the terms of the contract upon the contractor. The financial incentives for the contractor, in any fixed-price contract after bidding is completed and a price is accepted, are for the contractor to perform the work at a lower cost than bid. In order to prevent this natural incentive to cut costs from leading to a degradation of service, constant oversight by a regulatory authority will be required.<sup>17</sup>
- (d) This is not the competition envisioned in the 1996 Act. It has been argued that competitive bidding is, in fact, anti-competitive, at least in terms of the customer's access to competitive alternatives.<sup>18</sup> Under competitive bidding, carriers are only on an equal footing once every bidding cycle. After the successful bidder is selected, the winning entity has a support level advantage over the unsuccessful bidders which may be a barrier to competition.
- (e) Modernization of service for the rural area might be delayed. Standards for supported services will change over time. However, these changes could only be incorporated in the statement of work at the beginning of each bidding cycle. This means there could be a built-in delay before these new supported services could be brought to the rural area.

## **D. Competitive Bidding For a Carrier of Last Resort**

Competitive bidding can also be used to select a carrier for areas where there is no service or where there is limited availability of service.<sup>19</sup> The competitive bidding mechanism for carrier

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<sup>16</sup> Ibid, at paragraph 334.

<sup>17</sup> Ibid, at paragraph 324.

<sup>18</sup> Ibid, at paragraph 329.

<sup>19</sup> Ibid, at paragraphs 321 and 333. In addition, in the *Further Notice of Proposed Rulemaking on Promoting Deployment and Subscribership in Unserved and Underserved Areas, Including Tribal and Insular Areas*, adopted August 5, 1999, the FCC specifically requested comment on the possibility of using competitive bidding to address this subject.

of last resort would be used only where a community has consented to its use, and only where the state or federal regulatory commission with jurisdiction has determined that no carrier is willing to serve the area with advanced services capable plant under current support mechanisms. Competitive bidding to be a carrier of last resort would differ from the general competitive bidding mechanism in the following ways:

- The bid would have two components. The first would be a proposal for a universal service grant that would offset some or all of the excess construction costs required to serve the area. This would be intended to overcome the bidders' reluctance to invest in an unserved area, and any inability to obtain financing.
- The second component of the bid would be a recurring support payment to cover operating costs and other costs not covered by the one-time grant. These payments would continue throughout the life of the service agreement of the successful bidder. The time period of service under the winning bid could either be set by the bid administrator or the bidder, and should not exceed the economic life of the facilities.
- The statement of work would include the requirement that technologies proposed by the bidders would have to be capable of evolving to advanced services in a reasonable time.

The successful bid would be that with the lowest present value of the two components. The bid administrator could reject all bids if too high, and re-auction.

## **1. Strengths**

- (a) Competitive bidding for supplier of last resort could get service to unserved areas. By incorporating an upfront grant to serve an area, this method is explicitly aimed at providing

incentives to extend service to unserved areas. The actual cost to serve an area would be determined by market forces in the bidding process.

- (b) Support would be predictable and sufficient. Throughout the life of the service agreement, the carrier should receive an amount of funding that it expects and needs in order to recover a fair return on its investment and expenses.

## **2. Weaknesses**

- (a) Dependence upon a complete statement of work. The statement of work would have to include a complete list of supported services. This might limit future evolution to advanced services. A provider with a fixed-fee contract to provide specified services would have little incentive to improve service or provide services beyond those required in the statement of work.
- (b) Enforcement of statement of work requirements will still be difficult. The service commitment of the successful bidder for supplier of last resort would be longer than the relatively short service commitments found in general competitive bidding. As a result, a longer-term relationship could develop with the bid administrator/regulatory commission with jurisdiction over the area. This should ameliorate the enforcement prospects compared to general competitive bidding. However, if operating costs exceed expectations, regulatory remedies may be difficult.
- (c) This is not the competition envisioned in the 1996 Act. This form of competitive bidding would only be conducted where no provider has shown an interest in providing modern telecommunications services in a particular area. Because the result of this form of

competitive bidding is the selection of a carrier who would have the exclusive authority to serve an area, there would be no competition except in the bidding environment.

## **E. The FCC's Mechanism for Non-Rural Carriers, Using A Forward-Looking Economic Cost Model**

The FCC has developed a support mechanism for non-Rural Carriers which incorporates a proxy cost model to estimate the total element long run incremental cost, or forward-looking economic cost (FLEC) of providing the supported universal services in a defined area.<sup>20</sup> Under the FCC's method, the Synthesis Model<sup>21</sup> calculates the forward-looking economic cost to serve all customers within an estimated exchange boundary. In order to determine the overall level of support for each carrier, the per line costs that are the output from the Synthesis Model are then averaged over a specified area, which in the case of the non-Rural Carriers is the carriers' statewide service area.<sup>22</sup> The costs of all non-Rural Carriers within a state are then averaged together. Carriers within states with costs in excess of 135 percent of the national average cost receive support for a portion of their excess costs.<sup>23</sup> Even though costs throughout a state are averaged together for purposes of determining overall support, per line support is still targeted to

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<sup>20</sup> See *Federal State Joint Board on Universal Service*, Tenth Report and Order, CC Docket No. 96-45, FCC 99-304 (Nov. 2, 1999) at paragraph 2.

<sup>21</sup> The Synthesis Model is the result of several years of development and refinement by the FCC, and is the subject of RTF's pending White Paper 4.

<sup>22</sup> Under the FCC's non-rural support mechanism, federal support for a state is determined by averaging together the costs of all non-Rural Carriers within that state.

<sup>23</sup> The FCC's mechanism for non-Rural Carriers provides support for 76 percent of the difference between a carrier's average cost per line and 135 percent of national average cost.

high cost exchanges within the state. The targeting is a disaggregation process and external to the development of the overall level of support.<sup>24</sup>

## 1. Strengths

- (a) The level of support is transparent. Under the FCC's mechanism, once the model is run and per line support is determined, the level of support is publicly available and remains constant for a period of years.
- (b) Support is targeted to high cost exchanges. Because costs under the FCC's non-rural mechanism are determined on an exchange basis, the mechanism can be used to target support to high cost areas.
- (c) Support is not dependent on the incumbent's costs. Since support under the FCC's non-rural mechanism is not tied to embedded costs, but is based on forward-looking costs produced by the Synthesis Model, support is not dependent on an incumbent's past investment decisions. Assuming the model is accurate, the FCC's support mechanism should produce accurate incentives for competitors to serve high-cost areas.

## 2. Weaknesses

- (a) The Synthesis Model may not reasonably reflect the varying costs encountered by rural telephone companies. The RTF has undertaken an extensive analysis of the Synthesis Model and its ability to reasonably portray the forward-looking costs of Rural Telephone

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<sup>24</sup> As discussed in Section B above, there are many methods of targeting support.

Companies.<sup>25</sup> The results of that analysis leads to the conclusion that the Synthesis Model in its current form and with current national inputs may not provide a reasonable estimate of the costs of providing service in areas served by Rural Telephone Companies.<sup>26</sup>

(b) Support is sensitive to changes in inputs to the model. Changes in individual model input values or model techniques can produce results which vary greatly from the current levels of support.<sup>27</sup> Development of input values for the model is a major source of conflict and varying interpretations. Recommendations by industry experts, analysis of various data sources, the availability of data, and the comparability of data from various sources often produce widely varying values for inputs. Final decisions as to which data to rely on, which data to include or exclude, and which analysis techniques to use can have major impacts on input values and model output results.

(c) Statewide averaging of support would not result in sufficient support for Rural Carriers.

Under the FCC's support mechanism for non-Rural Carriers, the costs of each non-rural study area within a state are averaged together for purposes of determining whether additional federal support is necessary. An initial analysis of the application of this same methodology to Rural Carriers indicated that support for Rural Companies would decrease by

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<sup>25</sup> See RTF pending White Paper 4, "A Review of the FCC's Non-Rural Universal Service Fund Method and the Synthesis Model for Rural Telephone Companies."

<sup>26</sup> Since the FCC's mechanism for determining support is based on relative cost - as measured by the Synthesis Model - compared to a national cost benchmark, it is possible that a bias in the model's estimated cost may not necessarily lead to a bias in support.

<sup>27</sup> Support is also not predictable when the model and inputs are subject to review and change. This was evidenced by the large changes in support calculations for non-Rural Carriers which occurred between October 1999 and April 2000. See *Federal State Joint Board on Universal Service*, Ninth Report and Order and Eighteenth Order on Reconsideration, CC Docket No. 96-45, FCC 99-306 (Oct. 21, 1999), January Public Notice, DA 00-10 (Jan. 20, 2000), and Twentieth Order on Reconsideration, FCC 00-126 (April 7, 2000).

over \$1 billion annually.<sup>28</sup> This analysis raised substantial concerns about the sufficiency of support for Rural Carriers under the non-rural methodology.

- (d) The mechanism does not provide any incentive for investment. Under mechanisms using embedded cost, there is a built-in incentive to invest in the network: the more investment, the more support. With forward-looking economic costs, support is calculated without any reference to actual investment. Support will not change regardless of how much or how little a company has actually put into network upgrades. The FCC's mechanism does not contain any inherent incentive to promote investment in high-cost areas. The FCC addressed this issue by requiring states to certify that support received under the non-rural support mechanism was being used for the advancement of universal service as set forth in Section 254(e) of the 1996 Act.

## **F. Rate Buy-Down Mechanisms**

Under this mechanism, the market would determine the level of support needed for each area or each customer. The incumbent carrier would let local service rates “float” to a market value. Once rates were at a market level, the regulatory commission would adopt a support schedule that would buy down the rate to a predetermined rate ceiling. In an area with no competition, the ILEC would determine the cost of serving the customer subject to regulatory approval, using either the embedded cost of serving the area or a forward-looking economic cost proxy model. This method is similar to a system adopted by the state of Wyoming.

### **1. Strengths**

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<sup>28</sup> See pending White Paper 4.

- (a) In areas where competition is sufficient, market forces would control support costs. In this mechanism, wherever there is competition, market forces would set the customer's voice grade access rates.
- (b) Support would be targeted. Disaggregation of cost is a key element of this mechanism. All support would be explicit and unique to a customer or group of customers. The amount of support a customer would earn the carrier would depend on either the market cost or the forward-looking cost of serving the customer.
- (c) A rate buy-down facilitates portability of support. Under this system, support simply stays with the customer. If each high cost customer, or group of high cost customers, has a specific rate, which would be bought down by support payments to a state or national average rate, then each would have a specific buy down amount associated with it. If the customer migrates to a competitive ETC, that specific buy down amount could be transported to the new service provider for the customer.

## **2. Weaknesses**

- (a) This mechanism invites gaming, even by the incumbent in the absence of competition.  
Unless a proxy cost model is used to disaggregate costs, prescribing the method of disaggregation of embedded costs within an exchange would be critical to success of this mechanism. If embedded costs were used as the basis for rate setting, carriers would have strong incentive to assign common costs to customers who already fall above the support threshold, in order to maximize support in areas where there is least likelihood to be competition.

(b) Support would not provide incentives for modernization of rural network infrastructure.

Unless the mechanism set rates using reasonably accurate disaggregated embedded costs, the connection between investment and support would be missing.

(c) A rate buy-down support mechanism could be difficult to administer. If each customer or cost zone had a unique rate, then each customer would have a unique support amount. The greater the number of cost zones and support amounts, the more difficult this system would be to administer and use.

(d) A rate buy-down mechanism could invite “means testing.” A rate buy-down mechanism could potentially be disaggregated to the individual customer level. This could invite “means testing” of individual customers, that is, support would only be available for low-income individuals in high-cost areas. If means testing became part of the mechanism, the level of administrative complexity would increase and the mechanism would be less likely to provide comparability between urban and rural areas.

## **G. A Melded Mechanism**

The melded mechanism is a universal service support mechanism that is a blend of the current mechanism, based on embedded costs, and the FCC’s non-rural support mechanism based on forward-looking costs. At the March 2000 meeting of the RTF, the Rural Utilities Service (RUS) of the United States Department of Agriculture made a presentation outlining a potential melded mechanism. A brief summary of the RUS plan is presented below.

The essence of the Melded Mechanism is a transition from embedded cost to forward-looking cost as competition actually develops within an area. If competition does not occur, there would be little change from the embedded cost system. The plan starts with the assumption that competition can come at any time and any place in the incumbent’s territory. Since that is

the case, it is assumed that five percent of the incumbent's plant is "subject to competition," even before any competitor appears. In this pre-competitive situation, the incumbent will receive support in two parts. To support the 95 percent of plant that is not yet subject to competition, the carrier receives 95 percent of the amount which would have been calculated under the current mechanism. To support the five percent of plant that is subject to competition, the carrier will receive five percent of the forward-looking cost estimated by the Synthesis Model or the remaining five percent calculated under the current mechanism, whichever is higher. In cases where the incumbent's embedded cost is below the cost model, the carrier would see a small increase in support. In cases where the incumbent's embedded cost is above the model, there would be no change.

The Synthesis Model would be run to identify groups of high cost customers within the study area.<sup>29</sup> Only high-cost areas enter into the universal service calculations, and only the gain or loss of high cost customers need be considered. A new entrant and an incumbent would therefore compete on equal terms in low cost areas.

When a competitor wins a high-cost customer, any portable support (if the competitor is an ETC) or any reduction in support to the incumbent (if the competitor is not) will come from the five percent of plant and its associated costs that is subject to competition. As competition for high cost customers grows, the portion of the incumbent's plant that is subject to competition would increase as set forth in the table below.

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<sup>29</sup> This portion of the proposal would require modifications to the Synthesis Model to produce output reports at a level lower than the wire center level.

Percent of High-Cost Customers Served by Competitive ETC	Percent of Plant Subject to Competition
<2.5	5
<5	10
<10	25
<25	50
>25	100

## 1. Strengths

- (a) Support would be predictable. Portable support can be calculated on a forward-looking economic cost basis, and trained personnel can compute them by running the model. At least between computer runs, support available to a competitive ETC should be predictable.
- (b) When no competition develops in an area, the embedded cost part of the mechanism continues to provide stimulus to invest in rural plant. Competition will provide this stimulus in active markets, but areas without competition would not otherwise attract plant improvement capital.
- (c) If there are multiple competitive ETCs in an area, by running the Synthesis Model for each batch of customers migrating to the individual carriers, the appropriate support for each could be found. Finding the incremental cost of customers won by a carrier could be done if the plan administrator knows the geocodes of the customers transported.<sup>30</sup>

## 2. Weaknesses

- (a) The melded mechanism is administratively complex. This method requires multiple runs of the proxy model as competition develops in an area. Upkeep of the model and the changing support amounts would necessitate continual involvement by the plan administrator.

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<sup>30</sup> This analysis would require modifications to the Synthesis Model to provide a capability to remove specific customers or groups of customers from model analysis.

(b) The support component calculated by the model will suffer the inaccuracies of the Synthesis Model. As with any proxy model, the accuracy of the model outputs as applied to rural areas are in doubt.

(c) The melded mechanism would require substantial additions to the current model capabilities. The melded mechanism contemplates developing costs at an individual customer or group level, a capability which does not currently exist in the Synthesis Model, and which would have to be developed. The mechanism also contemplates the capability of running the model after deleting individual customers or groups of customers from consideration by the model. Again, this is not a capability which is currently inherent in the model.

#### **IV Conclusion**

Making a recommendation on the most appropriate mechanism for sizing the universal service fund for Rural Carriers is one of the most crucial responsibilities of the Rural Task Force. This White Paper has highlighted the options considered and evaluated. Clearly no option is perfect. Each has unique strengths and weaknesses in terms of fulfilling the evaluation criteria outlined in the opening pages of this paper.

In developing its final recommendation, the Task Force is considering which of the available alternatives for sizing the rural carrier universal service fund best meets the evaluation criteria. Equally important, however, the Task Force is considering how identified weaknesses of the recommended alternative might appropriately be mitigated. We emphasize again that a universal service support mechanism is a series of policy decisions, each of which have a range of options, and each of which play a role in determining whether the Congressional goal of preserving and advancing universal service is actually achieved.

**Rural Task Force White Paper 3**

**Alternative Mechanisms for Sizing  
A Universal Service Fund for Rural Telephone Companies**

**- The Effects of Large Scale Averaging -**

Although all support mechanisms attempt to determine the appropriate amount of support for each access line within a particular area, each mechanism relies to some extent on the averaging of costs across wide areas. Averaging is a useful administrative tool which simplifies dealing with large numbers of companies and customers. However, large scale averaging has certain drawbacks when used to produce per line support that is portable, available to all eligible telecommunications providers on a competitively neutral basis, and used “...only for the provision, maintenance, and upgrading of facilities and services for which the support is intended.”<sup>31</sup> Some of the problems created by large-scale averaging are listed below:

- Averaging masks true cost. It is well known that the actual cost of providing basic telecommunications service varies greatly from area to area based on factors such as distance, density and terrain. However, if a universal service mechanism determines the cost of providing basic service averaged over an entire study area, the cost of serving every access line in that study area will appear to be the same.
- Averaging invites competitive gaming. If the average customer cost of an incumbent’s entire study area is used for determining portable support, an ETC would receive the same amount of support whether it served a low-cost town customer or a high-cost rural customer. A competitive ETC could “game the system” by targeting low-cost customers within the study area. Regardless of the actual cost to serve these low-cost customers, a

competitive ETC would receive support as if it were serving higher cost customers. This would provide uneconomic incentives for competitive entry.

- Averaging makes targeting of support difficult. Under Section 254(e) of the 1996 Act, universal service support is to be used only for provision and upgrading of facilities and services for which the support is intended. Section 254(b)(3) requires that consumers in rural, insular and high-cost areas have access to services and rates that are comparable to those available in urban areas. In order to accomplish these goals, universal service support should be targeted to high-cost areas within an incumbent's study area. If support is averaged across the entire study area, it is virtually impossible to target this support to truly high-cost areas.

A potential remedy to the problems created by large scale averaging is disaggregation of support, that is, matching support available for serving a particular area with the actual costs to serve that area. If support were disaggregated, low cost areas would receive no support, while high cost areas would be slated for substantial amounts.

Since cost models build up overall costs based on the cost to serve small areas, disaggregation can be accomplished relatively easily in mechanisms based on proxy cost models. However, disaggregation is more difficult in mechanisms based on embedded cost, since historic costs were rarely recorded on an area-by-area basis. A working group of the RTF is looking at different methods of disaggregation available to Rural Carriers.

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<sup>31</sup> 47 USC 254(e).