

**CONSULTANTS' PLAN
FOR UNIVERSAL SERVICE**

**A White Paper To The
State Members
Of The
Federal-State Joint Board
On
Universal Service**

**Peter Bluhm and Dr. Robert Loube
Rolka Loube Saltzer Associates**

February 7, 2011

DISCLAIMER

THIS WHITE PAPER HAS BEEN PREPARED BY MEMBERS OF THE STATE STAFF OF THE FEDERAL-STATE JOINT BOARD ON UNIVERSAL SERVICE AND ITS CONSULTANTS IN ORDER TO ASSIST THE RELEVANT DELIBERATIONS OF THE STATE MEMBERS OF THE JOINT BOARD. THE ANALYSIS AND VIEWS EXPRESSED IN THIS WHITE PAPER ARE THOSE OF THE AUTHORS AND DO NOT REFLECT THE FORMAL POSITIONS OR OPINIONS OF THE REMAINING STATE STAFF, STATE MEMBERS, OR GOVERNMENTAL/NON-GOVERNMENTAL ENTITIES THAT CURRENTLY EMPLOY THESE AUTHORS.

Consultants’ Plan for Universal Service

Contents

I.	Goals.....	2
II.	Fund Size, Contribution Base and Related Issues.....	2
III.	The POLR Support Mechanism.....	3
	A. Overview.....	3
	B. The Components and Their Relationships.....	4
	C. Funding Cap.....	5
	D. Step 1 – Targeted Support.....	6
	1. Cost.....	6
	2. Revenue.....	8
	3. Lines and Locations.....	10
	4. High-Cost Segment Boundaries and Mapping.....	12
	E. Step 2 – Intercarrier Compensation Reform Support.....	12
	F. Step 3 – Overall Earnings Ceiling.....	13
	G. Step 4 – Limited Support to Extremely High-Cost Areas.....	14
	H. Step 5 – Initial Federal Support.....	14
	I. Step 6 – Adjustment for State USF Funding.....	15
	J. Step 7 – Adjustment for Build-Out and Service Quality.....	15
	1. Build-Out Requirements.....	16
	2. Service Quality Requirements.....	16
	K. Step 8 – Phase-In.....	17
IV.	The Mobility Fund.....	17
V.	The Wireline Broadband Fund.....	17
VI.	Intercarrier Compensation.....	18

I. Goals

This plan was prepared by consultants to the State Members of the Universal Service Joint Board. The overall goal of this proposal is to alter legacy high-cost mechanisms so that they conform to and are aligned with the National Broadband Plan and to provide a solution to intercarrier compensation issues. In line with that over-arching goal, the proposal

- Provides support for the provision of broadband service. The FCC must put together support mechanisms that not only pay for the initial rollout of the service but also for its long term viability. To obtain support, carriers must meet provider of last resort responsibilities including meeting specific goals for broadband build out and participating in Lifeline programs.
- Contains incentives for carriers to invest their own funds in broadband, to enlarge the portion of their service areas where broadband is available and enhance the services that are available.
- Makes provision for early adopters of broadband capable networks. Eliminating support for the early adopters would discourage other carriers from making initial investments in broadband technologies because carriers could not be confident that revenues needed to support that investment would be sustained over the life of the investment.
- Support will be specific, predictable and sufficient. It should be used to achieve reasonably comparable rates and services.

At the same time, the proposal makes clear that universal service is not a gift that replaces reasonable business decisions and allows supported entities to live solely off universal service. The sufficiency standard in the Telecommunications Act means that support should be enough to do the job but not so much that universal service becomes a heavy burden on non-supported customers.

II. Fund Size, Contribution Base and Related Issues

The Plan proposes that fund size should remain approximately the same as the current fund size. Increases in the fund size should be related only to increases in Lifeline programs.

The Contribution Base should be expanded to include broadband services such as DSL, Cable Modems, and wireless broadband. Wireless communications services such as text messaging should be explicitly included in the Contribution Base for all wireless carriers. The larger base will be better able to fund new lifeline programs based on the revised definition of universal service that will include a broadband component. The larger base will also replace the anticipated reduction in narrow-band service revenue and will reduce the contribution factor.

Increased funding for other high-cost purposes should be financed by the elimination of the equal support rule and the consolidation of existing support programs High Cost Loop

(HCL), Local Switching Support (LSS), Model-Based support, Interstate Common Line Support (ICLS) and Interstate Access Support (IAS)) into the new structure.

III. The POLR Support Mechanism

A. Overview

The Plan includes a multistep support mechanism for high-cost support of wireline eligible telecommunications carriers (ETCs) that provide both voice and broadband service. It consists primarily of an overall structure, and it is agnostic about the details of many of the steps. In the future, support for providers of last resort (POLRs) will be directed toward high cost rural areas of all carriers. In order to receive support, a carrier would have to prove that support is necessary to maintain its financial viability to supply those services in rural areas. Carriers would also have to meet broadband service quality standards.

One underlying assumption is that cost-based support for ETCs will continue in some form, but that those mechanisms should be adapted for broadband. The proposal therefore assumes that support should be a function of the eligible telecommunications carrier's "gap," or the difference between its costs and its reasonably expected revenues. This general approach is consistent with existing high-cost mechanisms that help to cover debt and equity obligations arising from privately raised capital. This proposal does not include any direct government grants of capital for construction, although it could be adapted to accommodate such grants.

The proposal is not intended to affect whether a service is regulated or how it is regulated. For example, existing FCC "price cap" arrangements and "pricing flexibility" arrangements would not be affected. The proposal is capable of responding to intercarrier compensation reform. The proposal does not concern itself whether states have "deregulated" telecommunications or broadband services, although it does include an expectation of state financial participation in supporting high-cost areas.

The central idea is that a universal service support mechanism is necessarily a calculation that contains a series of steps, each of which is a set of mathematical procedures. The proposal seeks to define these mathematical procedures in a modular way, thereby making it possible to examine separately the questions of whether each component is desirable, how it should best be designed, and how it should fit into the larger multistep mechanism.

This approach can simplify consideration of some issues that have been problematic in the past. For example, the proposal separates the question of the proper scale for aggregating an ETC's costs from the question of how much support a state should generate for its own high-cost areas. Similarly, the proposal separates the question of whether costs should be measured by models from the question of how those costs, once measured, should be used to calculate support. Finally, it explicitly relates the parameters used in calculating support to expected effects on consumer rates.

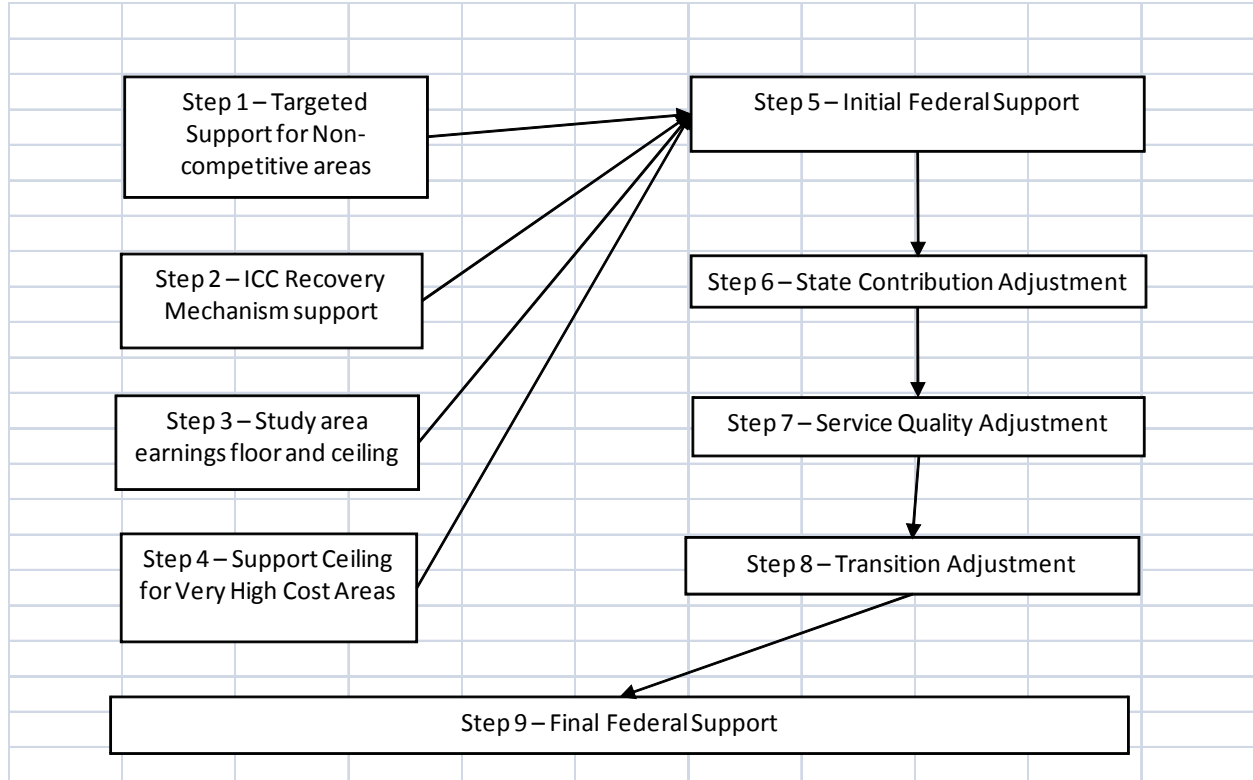
B. The Components and Their Relationships

Each component in the proposal has previously been proposed by industry or by other Federal-State Joint Board on Universal Service staffers, sometimes without stating how those components would fit into a larger structure that satisfies the goals of Section 254 of the Act. The major steps in the multistep proposal are:

1. A targeted cost-based mechanism that supports only high-cost areas.
2. A method of estimating support to compensate carriers for mandated access charges revenue reductions.
3. A means of ensuring that support is not so large that an ETC's profits are excessive.
4. A limit on support in extremely high-cost areas.
5. A means of reconciling all the preceding support claims.
6. A set of expectations for funding by state universal service funds (USFs), with matching federal funds.
7. A way to ensure that funding is conditioned on compliance with reasonable build-out expectations and reasonable service quality.
8. A phase-in provision that softens any fiscal shocks that would otherwise come from the change to the new system.

The Multistep Proposal does not necessarily endorse each of these components. Rather, it merely offers a modular structure by which each component can be placed in a logical order. Some steps can be deleted entirely, or redesigned, without unbalancing the structure. Most of the steps have inputs that require company-specific measured data and operate with nationally prescribed parameters.

The following graphic illustrates how the components of the Multistep Proposal are related.



The graphic illustrates how the Multistep Proposal allows for explicit debate on the best order of the steps. For example, the graphic shows that the transition adjustment occurs in Step 8 after service quality adjustments have been made. The current order requires carriers to meet broadband specific build-out goals as a prerequisite for obtaining transition support. If the order were reversed, Transition Adjustment support would be independent of carrier performance.

This document describes the Plan. It is accompanied by a spreadsheet that illustrates the relationships among the parts. The illustrator assumes initial conditions for a hypothetical carrier, including cost, rates, and demand levels. It then illustrates how the preceding steps operate mathematically to produce a final federal support amount for the hypothetical carrier.¹ Because the spreadsheet states its assumptions (local facts and nationwide parameters), the reader can change those facts and assess the effects on support.

C. Funding Cap

The total amount of POLR support should equal the current amount of high cost support provided to incumbent local exchange carriers (ILECs) plus \$500 million per year. The additional support funding would be obtained from the elimination of competitive ETC (CETC) support under the identical support rule. The additional support may be needed to both maintain

¹ In some cases the spreadsheet is more detailed than the following description.

a broadband-capable network in rural areas and to offset revenue loss associated with intercarrier compensation reform.

The mechanism described below achieves this overall cap by adjusting nationwide parameters that are used in the support calculation. The details are described below.

D. Step 1 – Targeted Support

In the past, support areas have been defined by state boundaries, carriers, wire centers and customer serving areas. It is generally understood that even in rural wire centers, there are sub-regions of high and low cost. The metaphor of a “donut” (i.e., the high cost very rural area) and a “hole” (i.e., the low-cost town) has been used to describe this phenomenon. Here, the donut area is referred to as a “high-cost segment.” The Plan seeks to contain support areas to the smallest feasible high cost area, the high-cost segment.

Step 1 requires finding a satisfactory method to define these high-cost segments, to fairly estimate the costs of serving them, to fairly estimate the revenues that can be obtained within them, and perhaps to measure some related demographic factors such as population and building locations.

Step 1 provides support for capital and operating costs within the boundaries of high-cost segments of existing study areas. The fundamental support equation is:

$$Support1 = [(Cost) - (Revenue)], \text{ but not less than } 0$$

The costs and revenues would be measured solely within the boundaries of those high-cost segments.

1. Cost

In estimating costs and revenues, the Plan takes a “total company” financial view. It includes the costs and revenues associated not only with “regulated” voice operations (interstate and intrastate, switched and special access), but also the costs and revenues from broadband Internet operations.² Companies would be required to report cost and revenue data on their “total company” and their “total regulated” operations.

In Step 1, cost would be defined as the carrying cost of a total network capable of providing both broadband and voice to the entire non-competitive area. This does not imply that separate voice and broadband networks will be maintained, merely that voice functionality will be provided continuously as the ETC extends broadband service. Cost should cover all capital costs, including a reasonable return on net investment and operating costs, including “middle mile” broadband transmission costs from the end user to the Internet backbone.

² The proposal could be adapted to consider video operations as well, although that feature is not currently included because of the risk that losses in the video business might increase the demand for support. The proposal ignores the risk that video will produce a profit in order to avoid the risk that video will produce a loss.

The Plan proposes that costs be calculated using a return on investment equal to 11.25%. This is the current FCC prescribed rate, although the FCC has not modified it in many years.

With one exception, costs in Step 1 would be defined by a cost model. The Plan proposes that the FCC continue to use its existing cost model, but with the following revisions:

- Geo-coded customer location data should be a required input.
- Special access lines per wire center should be obtained and, if possible, the geo-coded customer location should also be obtained.
- The model should use a road-constrained minimum spanning tree. The model currently uses a minimum spanning tree that is not road constrained.

In addition, the Plan recommends that the FCC commit to revising the model's special access algorithms before the end of 2013.

The exception to model use is for rural LECs. Under the Plan, a rural carrier may elect to have its Step 1 cost measured on an embedded basis rather than using a cost model. Those costs should be limited so that only reasonable and warranted costs are included. To accomplish that task, the Plan suggests that the Joint Board investigate whether embedded costs should be limited by investment caps and expense caps. An investment cap would limit the size of the gross plant used to determine support. This cap would prevent carriers from making excessive investments in order to obtain universal service funding. An expense cap would be similar to the current corporate operations cap used in the high cost loop mechanism, but could be extended to include other expenses.

Because Step 1 involves a cost-of-service analysis solely for the high-cost segment, the FCC will have to establish a procedure to separate costs within each study area between the high-cost segments and the low-cost segments. This problem must be solved both for carriers that measure costs using embedded methods and carriers subject to the cost model.

Networks often have economies of scale that are generated by common facilities or joint operations processes that are shared at the exchange level, the study area level, or even the holding company level. In allocating costs, the FCC should not attempt to develop the stand-alone costs of serving only the high-cost segment, because the resulting cost would not recognize those economies of scale. While a stand-alone cost study would generate a fair estimate of the entry cost of a competitor who chooses to serve only the "donut," it overstates the actual costs of an ILEC that actually served both the high-cost and low-cost segments. Moreover, it would overstate the cost to a new entrant, such as a cable company, that decides to enter the market by expanding from an existing base in the low-cost segment.

To solve this problem, the FCC's general method of allocating cost between the high-cost segment and the low-cost segment should be to estimate the incremental cost of serving the high-cost area within each exchange, assuming service already exists in the low-cost segment. Stated differently, the cost of the high-cost segment should be equal to the cost of serving the entire exchange, minus the cost of serving only the low-cost segment.

For embedded cost carriers, we suggest the following methods:

- Cable and wire facilities (C&WF) investment and expenses should be allocated by route mile, with an extra weight added for in-town or low-cost segment miles. C&WF costs are sensitive to loop length and thus to location density. An obvious choice would be to allocate cable and wire facilities on the basis of cable route miles. However, not all route miles are equally costly. Loop cost per route mile can be higher in developed areas because of congestion, the inability to use plows, and the placement of other utilities. Therefore, a simple rule that allocates cable and wire facilities according to route miles would likely place an unreasonable amount of cable and wire facilities cost in the high-cost segment. A weighting for route miles in the more dense area can solve this problem.
- Central office switching costs are common to the high-cost segments and low-cost segments of each exchange and should be allocated between those segments. For example, in a high-cost segment area that serves 40% of the locations in an exchange, it would be reasonable to allocate 40% of switching cost to the high-cost segment.
- Corporate operations and customer operations should be shared among customers within a study area or among all of customers served by the holding company.

As noted above, the Plan calls for some carriers to have their cost defined by the FCC's cost model. For these carriers, cost data will be derived from the model and will be calculated on an exchange-by-exchange basis. Specifically:

- For exchange cable and wire facilities, the model first would develop customer serving areas (CSAs)³ within each exchange. Second, the model would assign each CSA to either the high-cost sector or the low-cost sector of that exchange, based on an assessment of that CSA's number of locations per cable route mile. Third, the model would calculate the C&WF cost in the high-cost sector as equal to the total C&WF cost of all CSAs in the exchange minus the C&WF cost for the low-cost sector.
- For central office equipment and other costs, the FCC model would be modified to use the same allocators on an exchange basis that the FCC established for embedded cost carriers on a study area basis.

2. Revenue

Under the Plan, the basic support equation subtracts revenue from cost. This is not the traditional choice. Current FCC support mechanisms subtract a fixed number, often termed a

³ A customer serving area under the FCC's current model is an area capable of being served by a single remote terminal and copper loops of 12,000 feet or less. The model "constructs" a feeder and distribution network. The feeder cable connecting the remote platform to the wire center may serve more than one remote platform.

“benchmark” or a “cost benchmark.” The proposal recommends a new policy for several reasons:

- A revenue benchmark more accurately reflects the economics of operating a telecommunications enterprise. As the FCC recognized in its “Broadband Availability Gap” paper (OBI Technical Paper No. 1), it is the gap between prospective costs and prospective revenues that makes a business plan to invest in telecommunications facilities either workable or unworkable. Using a revenue benchmark allows for more explicit consideration of factors that are actually likely to affect the net gap, and therefore the ability of the ETC to invest and to continue providing essential services.
- A revenue benchmark promotes explicit consideration of all revenue sources produced by the network, rather than one or two. By taking into consideration all revenues generated from the network, a revenue benchmark therefore is likely to use support funds more efficiently.
- A revenue benchmark promotes explicit consideration of how support is expected to affect rates. This increases transparency and accountability.
- A revenue benchmark, if properly designed, will allow policy makers to target the rate benefits of support to particular customer groups. For example, the FCC can set separate parameters for expected (“benchmark”) revenue per voice customer, and benchmark revenue per broadband customer. This creates an opportunity to target benefits among subscriber classes.
- A revenue model will be sensitive to a variety of competitive conditions in the ETC’s local markets that actually affect the ETC’s ability to provide service over the long run. For example, in areas where ETCs face effective competition, this method is capable of reducing expected take rates. This will be an important task in the future as more ETCs face cable and wireless competition for voice and broadband services.

The Plan assumes that the revenue term will be the output of a new revenue model. The task is not trivial, although it should be far simpler than the current cost model. The FCC’s “Broadband Availability Gap” paper has already done this work when it estimated expected average revenue per unit (ARPU) for broadband service as well as likely take rates (subscribers per location served).

The revenue term will likely include at least some actual revenue data, which could be constructed by multiplying announced rates and billing determinants. That would require the FCC to collect data on local and broadband rates. Local rates would be defined as the sum of local service, mandatory extended area service (EAS), and subscriber line charges (SLCs).

Under the Plan, the revenue term is also constrained by minimum expectations for retail rates and for take rates. The proposal suggests setting minimum rates that will be imputed to the ETC during the support calculation. Since the revenue term should be affected by take rates, the

proposal also suggests setting minimum take rates. Both of these measures would eliminate incentives to allow high-cost support revenue losses that occur through unduly low retail rates or unduly low take rates.

The constraints on the revenue term are expressed as national parameters, such as a minimum benchmark rate for local service and a minimum benchmark rate for broadband service. These would be the retail rates that supported carriers are expected to charge.

The Plan suggests that the “local rate” benchmark be set at \$25 per subscriber per month. Since many consumers currently purchase bundles of local, long distance, and data services, the Plan suggests that the Joint Board investigate whether it is appropriate for the rate of return calculation to incorporate benchmarks for the price and take-rates for bundled services.

The FCC can adjust these benchmark parameters to meet budget targets for high-cost spending. Of course, the parameters are expressed as rates. The FCC therefore will have to balance its desire for a small fund against its obligation to provide support that is sufficient to keep rates and services reasonably comparable to urban areas. This mechanism allows policy makers to know in advance how high rates are likely to go as a result of support reductions.

3. Lines and Locations

In this proposal, both the cost term and the revenue term in the support equation are expressed in units of “cost-per-location” rather than the traditional “cost-per-(switched) line.” There are several reasons:

- Cost-per-(switched) line is obsolete when networks provide multiple services. The problem has existed for some time, but has become worse. Traditional support mechanisms that relied on cost-per-line never did a very good job at assessing the impact of special access lines on the need for support.⁴ The problem has worsened with the arrival of broadband Internet service. DSL is not just a small sideline product for some supported wireline ILECs. It is a major source of revenue for most supported carriers. Defining “cost-per-line” based solely on switched service subscribers simply overlooks the important fact that subscribers are free to subscribe to varying mixtures of local, toll, special access, and broadband services.
- Locations are a reliable basis for estimating construction cost. Telecommunications engineers generally produce estimates of loop construction projects on a cost-per-location basis, not a cost-per-subscriber basis. Locations-per-route-mile is highly predictive of the per-location cost of building a rural

⁴ The current FCC cost model takes a fairly primitive approach to how special access affects costs. The model ignores circuits larger than DS-3, and assumes that DS-3 circuits are 28 times as costly as DS-1 circuits. The current FCC support mechanism for nonrural carriers takes no explicit account of revenues from special access. Instead, it reduces average cost somewhat in areas with a lot of special access. This appropriately reduces support to areas with a lot of special access circuits, but the mechanism offers no explicit way to evaluate whether the amount of the effect is appropriate.

wireline network. Whether customers will actually subscribe at those locations is ordinarily a second order cost consideration.⁵

- Using locations more accurately estimates costs through market shifts. This is a corollary of the prior point. In evaluating which areas are more costly to serve, cost per location does not change when subscribers are added or dropped. Therefore a cost-per location measurement will not vary as the ETC's market shares change in competitive areas, a factor that in reality affects revenues far more than costs.
- Using locations in the revenue term allows for more explicit discussion of take rates and how varying take rates should affect support.

Measuring locations is more difficult than measuring switched lines. The National Technology and Information Administration (NTIA) has done some work in this area, but its data are probably not specific enough to be used for support distributions.⁶ Commercial sources of geographic information system (GIS) data may be able to solve this problem, or ETCs may have to file location data, much as they currently file line counts. If GIS data are used, some studies may be necessary to define a workable metric for estimating locations. In rural areas, locations could closely match census households. In more urban areas, a reliable location metric will be needed to apply to various kinds of office, commercial, and industrial properties.⁷

Before reaching a conclusion about lines versus locations, it is important to understand the current support mechanism dynamics when an ETC loses lines to a competitor. Traditional cost-based support programs operate on a "cost-per-line" basis. In these systems, when an ILEC loses lines to a competitor, its "cost-per-line" increases. The denominator in the ratio is lower, while the numerator (cost) may not change appreciably. Under rate-of-return support mechanisms like HCL, that increases per-line support to the carrier, and much of the lost subscriber revenue is replaced with high-cost support.⁸ While some might consider this result undesirable, if the purpose of support is to give ETCs the capability to continue providing essential services, there is no other choice. In sum, competition has made service harder to support in many areas, because it has removed implicit subsidies. That was the intention of the

⁵ An additional subscriber generally adds only the cost of a drop and a network interface device. The latter can be expensive for fiber-to-the-premise (FTTP) networks.

⁶ NTIA collected data on customer locations. It allowed reporting entities, however, to aggregate locations in census blocks under two square miles. Some areas likely to need support are located in areas where census blocks are smaller than two square miles. Moreover, wireless carriers generally provided NTIA with location data that showed signal coverage areas rather than customer locations. For these reasons, NTIA data are probably not sufficiently comprehensive.

⁷ For example, an office building metric might be that a commercial office building has one location per 100 square feet of rentable office space.

⁸ The HCL mechanism is more complex because it also has a funding cap that dynamically redistributes support among eligible carriers. If there were no funding cap (or to the extent that a single carrier is too small to affect the overall cap noticeably), the HCL mechanism replaces most or all of the revenues lost when eligible ILECs lose lines through competition.

Act, but it also adds to the current burden of funding USF. While the Plan views this dynamic as generally appropriate for a support program, it also recognizes that replacing competitive losses may not be appropriate in some limited circumstances.

Under the Plan, a loss of subscribers affects the revenue term of the support equation, not the cost term. In most cases, a loss of subscribers normally will reduce revenue expectations, thereby increasing support. But the Plan also includes benchmarks for revenue per subscriber (ARPU) and for take rates. These parameters can be tailored to limit the revenue replacement dynamic. For example, if the carrier's subscriber take rate is already below a minimum standard, the plan would ignore the loss of additional subscribers, and support would not increase. In any case, articulating expectations about take rates would produce a more transparent distribution mechanism in which there is an explicit means of deciding which forms of revenue loss should be replaced by support.

4. High-Cost Segment Boundaries and Mapping

An essential task will be to define the boundaries of the high-cost segment. GIS technology is inexpensive today. The FCC should ensure that both the boundaries of service areas and of high-cost segments are mapped to suitable precision using GIS software. This will allow for more accurate mapping of locations as well as for improved cost models over time.

In defining the high-cost segment, one conceptual approach would be to rely on density. In most modeling efforts, a simple equation such as:

$$Cost = A + B/Density$$

explains most of the variation in cost,

High cost exchanges often have a “hockey-stick” cost curve. That is, cost is fairly stable over a wide range of densities, but, past a turning point, cost then increases rapidly as density further decreases. A reasonable density-base boundary could be selected that is at or near the typical density of the turning point. For example, the high-cost segment would include all customer serving areas that have a density less than a 20 locations per route mile.

The second conceptual approach is economic. The FCC would subtract areas where a business case can be made for providers offering broadband and voice service without a subsidy. The mapping task in this case would be complex and would require some initial decisions about geographic scale.

The FCC should recognize that maps are dynamic. Maps will need to be updated periodically as national broadband standards change, as technologies and materials costs change, and as new investment extends competitive service areas. Given the importance of local knowledge, states should probably be involved in this mapping work.

E. Step 2 – Intercarrier Compensation Reform Support

This step provides support to replace access revenues lost through federal and state policy changes in intercarrier compensation policies. The calculation is relatively simple. Per-

subscriber intercarrier-revenue is measured before and after the regulatory change. The difference, multiplied by a transition factor, is the per-line support amount under this step.

This step allows the FCC to weigh the effects on high-cost demand of actions that would reduce intercarrier compensation. It also allows the lost revenues to be phased down over time, if that is desired. If the FCC adopts the Plan's intercarrier compensation reforms discussed below, we anticipate that Step 2 support would be substantially less than previous estimates of intercarrier compensation reform support requirements.

F. Step 3 – Overall Earnings Ceiling

This step uses rate-of-return principles to calculate support for the ETC's entire study area. As noted above, the Step 3 earnings constraint is designed solely as a prerequisite for obtaining universal service support. It does not replace or govern any FCC or state commission rate-making regulatory plan. The Plan proposes that the calculation in Step 3 will use the same cost and revenue parameters as Step 1, including taking a "total company" financial view. The principal difference is that the calculation is performed over a larger area.

Step 3 will reduce support from the level achieved in Step 1 or Step 2 in several cases.

- Step 3 recognizes the efficiencies that are available from larger networks that are comprised of groups of entire exchanges. Economies of scale are possible in Step 3 ranging from needing fewer spare parts, to achieving more efficient outside plant maintenance.
- Telephone exchanges almost never have rate deaveraging within their borders.⁹ When all customers in the exchange are actually paying the same reasonably comparable rate for service, there is no reason to pretend that some outlying customers in the exchange must be paying high rates merely because the Step 1 cost model has identified these customers as having high costs.
- Step 3 recognizes that some carriers generate unusually high revenues in their low-cost zones. One example would be a carrier that serves a large city and has substantial special access revenues.
- Step 3 also serves as a check on Step 2, ensuring that replacement mechanism support does not raise overall earnings unduly.

Step 3 therefore allows the FCC to avoid subsidizing over-earning by carriers that might receive too much support if only the needs of the high-cost segment were considered. Step 3 therefore improves the effectiveness of the limited funds available through the federal support mechanism.

Step 3 could be modified to also include a minimum earnings calculation, although the Plan does not currently include this feature. The rationale would be that ETCs with at least some

⁹ Most large ILECs have abandoned zone charges that were formerly charged to outlying customers more than a fixed distance from the central office.

customers in a high-cost segment serve an essential function that would be at risk without support. If support under Step 1 is inadequate to keep the carrier in business, additional support could be needed to allow the carrier to reach a minimum level of earnings. This additional support would give the ETC an opportunity to continue to provide essential POLR services.

A second difference between Step 1 and Step 3 is how costs are measured. Step 3 uses embedded costs for all carriers. This is one of two ways that the Plan ensures that ETCs continue to invest in broadband facilities. To the extent that a carrier allows its plant to become highly depreciated, the rate base declines, and support would also decline. Using embedded costs thus encourages carriers to maintain a quality network that is capable of providing good voice and broadband services.

As in Step 1, the Plan suggests that the Joint Board investigate whether the rate-of-return support calculation should include expense and investment caps. The expense caps would be similar to the current corporate operations cap used in the high cost loop mechanism, but could be extended to include other expenses. The investment cap would limit the size of the gross plant used to determine the rate of return. This cap would prevent carriers from gold-plating their investments in order to obtain universal service funding. If funds permit, the investment cap could be raised over time to allow for construction of fiber-to-the-home facilities on wireline networks.

Step 3 would also consider all sources of actual revenue, including any federal broadband build-out funding obtained by the ETC from USAC, NTIA, or other sources. To the extent that federal funding was a capital contribution and need not be repaid, net plant would be reduced.

G. Step 4 – Limited Support to Extremely High-Cost Areas

This step proposes a limit on support in extremely high-cost areas. The underlying assumption is that satellite service is an acceptable broadband alternative in some very remote areas, and that it would be wasteful to provide sufficient support to maintain terrestrial facilities in these areas. For discussion purposes, the Plan proposes a limit of \$100 per location per month.

The effect of this limitation will be to make terrestrial service unaffordable in some very remote areas. Customers in these areas will be likely to have only satellite service.

H. Step 5 – Initial Federal Support

Step 5 combines all the preceding estimates of needed support into a preliminary or initial support amount.

First, Step 5 first combines the targeted cost based support from Step 1 with the Intercarrier Compensation Reform Support calculated in Step 2. Step 5 does not add the two, but takes the larger amount. This method essentially makes high cost a condition precedent of receiving support for lost revenue. It would be improper to add the support amounts from Step 1 and Step 2 because they take different views of the same financial operating statement.

- If the Step 1 amount is higher, then adding Step 2 support would allow double recovery of costs already recovered in Step 1.
- If the Step 2 amount is higher, then adding Step 1 support would allow double recovery of some revenue losses already recovered in Step 2.

The next procedure in Step 5 is to limit the above result by the limits set in Step 3 (maximum earnings) and Step 4 (very high costs).

I. Step 6 – Adjustment for State USF Funding

This step creates an incentive for states to share financially in the burden of high-cost funding by establishing their own state universal service funds for high-cost areas, as authorized by Section 254(f) of the Act. The courts have held that the Act plainly contemplates that support for universal service will be a “partnership,” and “it is appropriate – even necessary – for the FCC to rely on state action in this area.”¹⁰ Moreover,

[T]he FCC may not simply assume that the states will act on their own to preserve and advance universal service. It remains obligated to create some inducement--a "carrot" or a "stick," for example, or simply a binding cooperative agreement with the states--for the states to assist in implementing the goals of universal service. For example, the FCC might condition a state's receipt of federal funds upon the development of an adequate state program¹¹

The Plan includes such an inducement. The adjustment is calculated at the state level, in two steps. First, the amount of support calculated in Step 5 is reduced by a fixed national amount. The Plan suggests this amount at \$2.00 per location per month. Second, states can have all of these federal funds restored, on a 50% matching basis, if the state itself has a high-cost program under Section 254.

For example, a state that raises at least \$4.00 per location per month from its own program would be unaffected by this Step. A state that raises \$2.00 per location per month from its own program would have a loss of \$1.00 per location per month in federal funds.

This matching mechanism already exists in universal service mechanisms for low-income customers. The Lifeline program has a matching grant zone with a 50% federal match.

J. Step 7 – Adjustment for Build-Out and Service Quality

Step 7 is intended to ensure that support payments are effective in producing and maintaining quality broadband and voice services. It reduces support if the ETC fails to meet specific build-out requirements or to provide adequate service quality.

¹⁰ *Qwest Corp. v. FCC*, 258 F.3d 1191, 1203 (10th Cir. 2001).

¹¹ *Id.* at 1204.

1. Build-Out Requirements

ETCs would face a set of increasingly demanding performance standards that affect the amount of support. They would lose a percentage of their support if they fail to provide service at a prescribed standard. This system thus allows carriers to control their own destiny by meeting reasonable service quality goals, and it allows carriers to avoid reductions to support amounts due to line losses.

The proposal establishes two separate broadband standards for the first, third, and fifth year of the transition period. The higher standard is the “full availability” standard. A carrier that meets or exceeds the full availability standard would retain all of its current support. The lower standard is a “minimum standard.” A carrier that fails to meet the minimum standard loses all of its support.

The proposal also includes increasingly rigorous standards for broadband speeds. Service would be defined as a downstream broadband speed of 768 kbps in year one, 1.5 Mbps in year three and 4 Mbps in year five.

The standards in years 1, 3 and 5 are as follows.

	Downstream Speed	Minimum Standard	Full Availability
Year 1	768 kbps	40%	90%
Year 3	1.5 Mbps	50%	95%
Year 5	4 Mbps	60%	98%

Thus, to receive any POLR support in year five, the carrier must provide broadband service at 4 Mbps, and that service must be available to 98 percent of its residential customers. Carriers operating between the minimum and full standards would receive a pro rata share.

Availability would be measured only in the high-cost sector. This would ensure that support is used to provide broadband in the areas that the Step 1 calculation identifies as the high-cost areas.

2. Service Quality Requirements

No service quality adjustment currently exists in federal high-cost support programs. They are common, however, among state alternative regulation plans. These state plans sometimes impose cash penalties on carriers that, while subject to the plan, fail to meet specified service quality requirements. Typical service quality requirements include installation and repair deadlines, for example. While the Plan suggests inclusion of a service index, designing such an index, and testing its effects on support, are tasks the FCC would undertake in consultation with the Joint Board.

K. Step 8 – Phase-In

This step produces a gradual phase-in of the new support levels. The purpose is to avoid any possible rate shocks in areas where support is declining. A phase-in would also allow the FCC to ensure that federal USF surcharge rates do not become excessive. The ETC's final support would have increasing shares over time of the new support amounts from Step 7, and decreasing shares over time of its pre-reform support levels.

The Plan suggests a five-year phase-in. In the index year, each ILEC would have support equal to its current support. In each of five subsequent years, support would be a mixture of initial support and new support. For example, year 2 support would be a mixture of 80% of the carrier's initial support and 20% of its new support.

IV. The Mobility Fund

The purpose of the Mobility Fund is to finance the building of towers in FCC-designated under-served and unserved areas. The fund size will be capped at \$500 million. Funds will be obtained from the reduction of support to CETCs due to the elimination of the equal support rule. The fund will start at \$50 million per year and then expand by \$50 million in year two and then by \$100 million for years three through five.

The FCC will determine an allowed capital expenditure (cap-ex) per tower. Support for any tower would equal the cap-ex times 50% times a just and reasonable interest rate on a ten-year bond. Support for any tower ends after ten years. The just and reasonable interest rate would be set annually by the chief of the FCC's Wireless Bureau after reviewing the interest rates paid on communications sector corporate bonds.

The support would be allocated equally among the four national Census regions to ensure that all areas of the country receive support and that support is not concentrated in one or two states. If requests for support are less than one region's allocated support, the residual support would be allocated equally among the other regions.

If requests for support exceed the region's allocated support, then support would be allocated, first, among the unserved areas before any support is allocated to underserved areas. If requests for support from unserved areas are greater than the region's allocated support, then support is allocated to those towers that serve the areas with the lowest population densities.

If the requests for support from unserved areas are less than the region's allocated support, then the remaining support is allocated to the region's underserved areas with support allocated first to areas with the lowest population densities.

V. The Wireline Broadband Fund

The purpose of the Wireline Broadband Fund is to finance the building of broadband wireline facilities in FCC-designated under-served and unserved areas. The fund size will be capped at \$500 million. Funds will be obtained from the reduction of support to CETCs due to

the elimination of the equal support rule. The fund will start at \$50 million per year and then expand by \$50 million in year two and then by \$100 million for years three through five.

The FCC will determine an allowed capital expenditure (cap-ex) per line. Support would equal the cap-ex times 50% times a just and reasonable interest rate on a ten-year bond. The just and reasonable interest rate would be set annually by the chief of the FCC's Wireline Bureau after reviewing the interest rates paid on communications sector corporate bonds.

Support will not be provided until the construction project is complete and has been inspected to ensure that project can provide broadband service. The broadband service standard shall be at least 4 Mbps downstream and 1 Mbps upstream. This service standard should be revised annually so that customers are assured service comparable to urban service offerings.

The support would be allocated equally among the four national Census regions to ensure that all areas of the country receive support and that support is not concentrated in one or two states. If requests for support are less than one region's allocated support, the residual support would be allocated equally among the other regions.

If requests for support exceed the region's allocated support, then support would be allocated, first, among the unserved areas before any support is allocated to underserved areas. If requests for support from unserved areas are greater than the region's allocated support, then support is allocated to those providers that serve the areas with the lowest population densities.

If the requests for support from unserved areas are less than the region's allocated support, then the remaining support is allocated to the region's underserved areas with support allocated first to areas with the lowest population densities.

VI. Intercarrier Compensation

The goal of intercarrier compensation reform is to reduce regulatory arbitrage that occurs because a carrier charges different termination rates based on the type of call or because the termination rates differ across carriers. This goal should be achieved without increasing SLC charges and without increasing support levels.

To simultaneously achieve the reduction in arbitrage opportunities without increases in SLC charges and without increasing support levels, high intercarrier compensation rates must be reduced, but it is also necessary to allow low intercarrier compensation rates to be increased. Arbitrage opportunities are not caused solely by state commissions setting high state access rates but rather are a function of a number of decisions made in respect to a variety of policy concerns at both the federal and state level.

Under the Plan, each carrier has a maximum allowable terminating rate. The rate applies to interstate and intrastate traffic, and to both toll and local traffic. The FCC would establish the maximum rate one time in 2012. The maximum rate would be the lesser of the current interstate access terminating rate or the average intercarrier compensation revenue. Average intercarrier

compensation revenue is defined as the sum of current terminating revenue divided by the sum of terminating minutes.

In instances where the Plan creates a revenue loss, carriers would be allowed to increase their SLC rates to the current SLC caps. Any remaining losses would be recognized by Step 2 of the POLR support mechanism, and therefore could become a basis for additional high-cost support.

Under the Plan, a holding company that has multiple study areas may establish a single terminating rate for each state in which it operates. A holding company that has study areas in multiple states may establish a single rate for all its states.

The maximum allowable terminating rate for intrastate traffic for a competitive local exchange carrier (CLEC) would be the current rate for the ILEC serving the same area.

The FCC would annually adjust terminating access rates downward for all carriers that are engaging in traffic pumping. The first step in the procedure would be for the FCC to determine a national average terminating-to-originating ratio (T/O ratio). Second, the FCC would determine a "High Limit T/O Ratio," which would be set one standard deviation above the national average. Third, the FCC would adjust rates so that the terminating revenue for any carrier equals the carrier's initial rate times its originating minutes times the High Limit T/O Ratio.

For example, assume the national average T/O ratio is 1.2 and one standard deviation above the average is 1.7. Assume a carrier has a 1 cent rate for originating and terminating, 100 originating minutes and 200 terminating minutes. Without the maximum constraint the carrier would receive \$2.00 in terminating revenue (1 cent times 200 minutes). The Plan would limit the carrier to \$1.70 (1 cent times 100 originating minutes times 1.7 ratio). The carrier would have to revise its terminating rate to 0.85 cents (\$1.70 divided by 200 minutes). There are obviously two discussion questions related to this proposal: How high above the national T/O ratio should the maximum constraining ratio be set, and how often should the rate should be reviewed?