NTCA
NATIONAL TELECOMMUNICATIONS COOPERATIVE ASSOCIATION
The Voice of Rural Telecommunications
www.ntca.org

ATTACHMENT A

Diversions and Essential Reforms

Dale Lehman[1]

The Federal-State Joint Board on Universal Service raised a number of issues for comment (Docket No. 05-337) including: reverse auctions, disaggregation, broadband, and cost modeling. A number of comments, resembling a feeding frenzy, ask the Joint Board to consider more precise targeting of high cost support, elimination of rural/nonrural carrier distinctions, pilot programs for supporting broadband and/or mobility, and continued support of competition through USF. The Joint Board should resist these offers to increase the size of the fund and compound its sustainability issues. Instead, the Joint Board should heed the concerns expressed by NASUCA that most of these issues are tangential or diversions, and should focus instead on the essential reforms needed to continue and enhance universal service. This requires, first, a decision regarding the number of networks that USF should support, and then, fixing CETC funding accordingly.

This paper is organized as follows. Section 1 addresses the most fundamental question the Joint Board must address: the number of supported networks. The potential role for reverse auctions depends on the answer. Section 2 discusses the issues of cost modeling, disaggregation, and support for broadband. None of these issues are fundamental to USF reform, and the complexities they raise could derail the necessary reforms. Section 3 explores these necessary reforms by showing how duplicative and excessive CETC support needs to be addressed. Reverse auctions and/or cost models can play a role in these reforms. Section 4 provides concluding comments.

[1] Director, Executive MBA in Information and Communication Technology, Director MBA program, and Professor of Economics, Alaska Pacific University.

1. How many networks should be supported by USF?

A fundamental question is whether USF should support one network or two.[2] The fact is that we currently have two network technologies, wired and wireless, and both play important roles in rural America. Both are capable of providing voice services, although with differing quality characteristics. Both can support broadband service, although with differing speeds. Mobility is offered by wireless networks but not by wired networks. One vision of universal service embodies a set of services to be offered by at least one (possibly hybrid) network. This network would be too costly in some areas, requiring USF support.

Can this single supported network vision be achieved through the use of reverse auctions? Notwithstanding the affirmations of a number of parties, I maintain that reverse auctions cannot effectively determine which technological platform would be the supported platform. The reasons are due to differing technologies and their existing embedded infrastructures.

The value of auctions is to permit the market to reveal information that regulators do not possess, but that market participants do. Thus, a reverse auction could *potentially* reveal which technological platform can more inexpensively provide universal service. Many parties are resistant to having such a cross-technology auction, in fear that their platform will lose support to the other. The fear is valid because the definition of universal service is likely to determine the auction winner. For example, if universal service is defined to be ubiquitous broadband capability to all residential locations, with speeds of at least 2Mbps in each direction, then the wireline network is likely to win the auction. On the other hand, if universal service is defined to be voice grade service and lower speed internet access over 95% of the territory, then the wireless bidder is likely to be the victor. Thus, the auction winner will be predetermined by the service specification. And, all parties agree that a necessary step in any auction is to carefully specify the parameters of the service.

[2] There are parties that suggest that USF should support more than two networks (e.g., CTIA), but I will not consider this further. I supply some evidence that current support of multiple networks is wasteful, and I maintain that continuation of the current policy of supporting multiple networks jeopardizes the principles of universal service.

This is not a good use of an auction. Rather than the market revealing the most efficient technology, regulators must know the answer in advance.[3] They are not likely to even discover the "true" cost of providing the service through an auction. This is due to the second compounding problem – that of embedded infrastructures. US Cellular claims that auctions would be unfair because the incumbent network provider would be at an advantage, due to their mostly depreciated plant.[4] Who has the advantage is not so clear, however, but it is likely that either the mature network or the newer entrant will have an advantage, depending on the definition of universal service.

For example, if universal service is defined to be voice grade service, then a bidder with an existing network that is largely depreciated (but still capable of providing voice service) would certainly have an advantage bidding against a carrier with a newer network that still needs to be built out. On the other hand, if the incumbent provider's network is not capable of providing the definition of universal service, then it is the newer entrant that has the advantage (since the incumbent network will need to be replaced). It is unlikely that the networks will be in the same state of depreciation, so an auction is bound to be "unfair" to somebody.[5]

Two observations are in order. First, the "unfairness" is of little consequence for the efficient use of USF. The "advantage" of the favored network is a real advantage and means that universal service could be provided more cheaply by that network. The second observation is that the "true" minimum cost for providing universal service is not likely to be revealed by such an auction. All the winner needs to do is bid lower than the next highest bidder – it is not necessary for them to bid their lowest possible amount. So, they are not likely to bid significantly below today's cost for providing universal service.[6]

---

[3] The comments of the Missouri Public Service Commission are of note: they say that auction winners should not be chosen on the basis of price alone. The problem is that the more dimensions that an auction considers, the less valuable auctions become as a mechanism for awarding support. Universal service requires a long-term relationship between providers and the communities they serve, so an auction will require considerable foresight by regulators on dimensions other than price.

[4] This is factually incorrect, since the existing ILEC plant is, on average, halfway depreciated. This is what would be expected in a mature network. Of course, the extent to which current networks are depreciated will vary considerably across study areas.

[5] As evidence, consider the reverse auction used in India. It was widely criticized for pre-determining the winning bidder.

[6] As evidence, consider the reverse auction employed in Australia. It ended up validating the prior cost of providing universal service.

The combination of embedded infrastructures and different properties of wireline and wireless networks make reverse auctions a poor candidate for fundamental universal service reform The fact that the wireline network was built under the current USF regime also requires that stranded investment be dealt with before implementing an auction across technological platforms. Remarkably, these issues have received little attention in the comments submitted to the Joint Board. The comments of reverse auction supporters suggest few of these inherent difficulties – the fact is that reverse auctions for universal service have only worked reasonably well in greenfield developments, where embedded infrastructure is not an issue.

If the Joint Board recommends that both wireline and wireless infrastructures are to be supported, then reverse auctions may play a more constructive role. This is because we do not currently collect consistent data on wireless CETC costs. So, an auction could reveal the true cost of providing universal wireless service by permitting the multiple wireless CETCs to bid for their required subsidy. This is the first stage in Verizon's auction proposal, and it would address a necessary fundamental reform, as well as providing valuable insight into issues associated with reverse auctions for universal service. I will discuss the necessity of reform of the CETC process in section 3.

It is necessary, however, to develop further the basis for supporting wireless universal service. Wireless services are undeniably important and the quality of services in rural areas may not be comparable to that in urban areas. Mobility is not part of the current definition of universal service, and there has been no determination of the dimensions of rural wireless services that might need support. Multiple providers serve most rural areas of the nation – and have done so without support. So, several steps should occur before enacting a sensible support policy for wireless services:

- Establishment of mobility as a supported service.
- Determination of the dimensions of service that require support.
- Development of a distribution mechanism for awarding support for these dimensions of service.
- Building an oversight mechanism to ensure that support is used for the purposes intended.

The existing USF for wireline service provides a useful model for these steps, but it will necessarily differ for wireless service. In particular, the dimensions of comparable services and comparable rates need to be explored. It is the third step in which reverse auctions may have a role to play, although there are alternatives, as I discuss in the next section.

2. Models, Disaggregation, and Broadband

Cost Models

There are many issues associated with building reliable cost models. In the past, the models have not been up to the task of determining support for rural carriers. Undoubtedly, modeling has improved, particularly in the accuracy of the geographic data used as an input to these models. Despite these advances, the Joint Board should not be fooled into thinking that cost models can replace the use of embedded cost for rural carriers. Consider the 10 years of experience that the FCC and State Commissions have had using cost models for determining UNE prices. Contentious and costly proceedings were the norm. While cost models surely advanced during that decade, there is no evidence that their results were converging.[7] It would be naïve to expect cost models for universal service to be any less costly or less contentious.

Cost models do offer an alternative to reverse auctions for wireless CETCs. Wireless carriers do not collect and report cost data as the ILECs do. As a result, there are three options for estimating their costs. First, they could adopt an accounting and reporting methodology similar to that used by ILECs. This is an administratively costly alternative. Second, they could use a cost model. Potentially, this could be less costly to adopt, but that depends on how contentious their implementation becomes. Third, reverse auctions could be used to determine the USF needs for wireless services. Auctions have administrative costs of their own.

[7] For example, see Timothy J. Tardiff. 2002. "Pricing Unbundled Network Elements and the FCC's TELRIC Rule: Economic and Modeling Issues." Review of Network Economics, Vol. 1, Issue 2. Tardiff cites a three-fold difference in the results of cost models submitted by CLECs and ILECs.

These three alternatives are all feasible, but they are substitute policies. This point seems to have escaped the view of Alltel, which submits a CostQuest paper that states

> "However, each type of support model relies on the integrity of cost results from the cost model to provide a solution. Therefore, in order to make meaningful changes to the support model, it is critical to get the cost model right."[8]

Alltel does not appreciate the principal advantage of auctions – auctions require no cost information by regulators. To the contrary, it is the bidders that require good cost information. Costquest appears to have misconstrued regulators as their client when it should be the auction bidders.

Alternatively, cost models *could* be used to develop estimates of wireless universal service costs. They could also be used to estimate ILEC costs, but what problem would this solve? Alltel believes independent estimates of efficient ILEC costs are necessary because rate of return regulation invalidates reliance on the actual costs experienced by ILECs. I believe, after 10 years of experience with UNE cost models, that more controversy and more costly proceedings will be the only reliable result – good for the consulting business, but a diversion from the real issues of universal service.

Disaggregation

It is clear that study areas aggregate locations with a variety of cost levels. As a result, many high cost customers or communities receive less support (some receive none) than their own cost characteristics would dictate. The larger the study area, the more inadequate the support due to averaging. This means that disaggregation of support to the wire center level or below will increase the total size of the fund, *ceteris paribus*.

From the point of view of a rural community, it would seem that the size of my carrier's study area should be irrelevant to whether or not I should be supported by USF. This point is strongly made by Embarq. Along similar lines, AT&T argues that the rural/nonrural distinction is not relevant to the costs of serving high cost communities. Both argue that implicit subsidies from urban to rural areas are not sustainable and call on

[8] *See*, CostQuest Associates Proposal for a Competitive and Efficient Universal Service High-Cost Approach, p. 3, Exhibit 1 to Alltell's comments (filed May 31, 2007).

USF to more finely target support to areas with high costs, regardless of the identity of the serving carrier.

As persuasive as the facts may be, the Joint Board should hesitate before accepting these. What is missing is any discussion of the regulatory regime under which these carriers operate.[9] In many cases, they adopted incentive regulation plans – often they agreed to substantial investments in order to adopt such plans. The logic in these plans is that the regulated firm adopts increased market risk in exchange for pricing and earnings flexibility. For example, price cap regulation (PCR) has been described as follows:

> "PCR also shifts risk from consumers to the regulated firm. When it agrees to a price schedule that does not vary with realised costs, the firm bears all the risk--both favourable and unfavourable—associated with cost variation."[10]

More precisely, it is *market* risks that the incentive regulated firm willingly adopts. Increased competition in urban areas is one of these risks and it this competition which presumably undermines the implicit support in averaging costs across a study area. It seems disingenuous for a firm to agree to an incentive regulation plan and then complain that it now requires a new source of support due to the competition that it knew was developing in its urban areas.[11] Broadband is different, however.

Broadband

If broadband is included as a "supported service" then things are more complicated. First, it must be recognized that the largest disparities between rural and urban broadband deployment are in areas served by nonrural carriers, and most of these are price cap regulated carriers. Price cap regulation should not require any firm to make uneconomic decisions – they are only agreeing to bear market risks, not mandated non-

[9] Only NASUCA raises this issue in its comments.

[10] David E. M. Sappington, "Price Regulation" in Martin Cave, Sumit Majumdar, and Ingo Vogelsang, eds. *Handbook of Telecommunications Economics*. Amsterdam: North-Holland, 2002, Chapter 7, pp. 243. In the passage, Sappington is referring to cost variation over time rather than geography, but the principle is the same. Price cap regulation involves the firm accepting increased risk for increased reward.

[11] Incentive regulation plans vary widely in both their history and their details. It is possible that some plans leave room for this argument to be made, but they would be the exception rather than the rule. In most cases, it is exactly this competitive risk that the firm knowingly adopted in exchange for the reward of incentive regulation.

market obligations. Thus, if universal service is expanded to include broadband, price cap carriers may have a valid argument that it must now be supported.

On the other hand, many incentive regulation plans specifically included infrastructure investments are part of the "cost" of adopting the plan. In Colorado, for example, there was a rural infrastructure upgrade which eliminated all remaining party lines in the state.[12] One question to be asked is why these investments did not adequately provide for an advanced infrastructure. One important lesson is that technological foresight is highly imperfect – when these decisions were made, the need for that much fiber to be placed in rural areas was not appreciated. This is relevant to reverse auction proposals since they require regulators to engage in precisely such predictions.

As incentive regulation plans expire and are renegotiated, new regulatory compacts are struck. For example, the Vermont Public Service Board mandated specific increases in broadband deployment in exchange for an adjustment of Verizon's price cap formula.[13] Other states have enacted similar provisions. Pennsylvania imposed a condition for receiving alternative regulation that a LEC must convert 100% of its interoffice and distribution network to broadband capability by Dec. 31, 2015. Ohio has specific plans for advanced service deployment within 12 or 24 months of election of an alternative regulation plan.

True to the metaphor of "experimental policy labs," states have adopted a wide variety of incentive regulation plans with accompanying broadband investments.[14] These cannot be characterized as adequate, nor are they uncontroversial. They do raise questions, however of whether USF is the most appropriate place for broadband deployment to be fostered. These state efforts pose complications if broadband is included as a supported service. Will there need to be an "early adopter" fund for states that have already incorporated broadband investments into their incentive regulation plans?

---

[12] And led to the replacement of my 10 mile copper loop with a brand new 10 mile copper loop! There is still no DSL available at my former address, nor is it served by cable, and wireless service is marginal.

[13] Docket Nos. 6959, 7142, Successor Incentive Regulatory Plan for Verizon, Amended Plan, April 27, 2006.

[14] See, for example, the list of Broadband Statues at the National Conference of State Legislatures, http://www.ncsl.org/programs/lis/legislation/broadbandstatutes.htm or the Survey of ILEC Broadband Deployment Commitments, August/September 2005, NRRI/NARUC

Beyond these issues lies the question of whether broadband adoption goals can be met through USF. Deployment far exceeds adoption and it is not clear that the problem is inadequate deployment of service or inadequate adoption. USF support may do little to spur customer adoption. Further, the definition of high speed that satisfies section 254 of the Act is likely to be considerably slower than the high speed that economic development requires. The speed demanded by the majority of consumers may not be adequate for the economic development needs of rural communities. The section 254 criteria may be too restrictive to spur the required broadband infrastructure.

Section 706 certainly gives the Commission the authority to create funds necessary to achieve such rural and urban comparability of services and rates. However, given the significant efforts that many states have already expended, it is not clear that a simple enlargement of the scope of supported services is the most appropriate policy. Disaggregation and broadband pose similar challenges for USF. The basis for support is clear – its policy relevance is not. The most appropriate broadband policy is a matter of deep importance, but it threatens to derail more immediate necessary reforms to USF. The simple inclusion of broadband as a supported service raises more questions than it answers.

3. Necessary Reforms to USF

If the Joint Board finds that both wireline and wireless networks should be supported, then it is the wireless distribution mechanism that needs immediate fixing, not the wireline fund. No reliable evidence has been provided that the wireline USF is broken. Its costs are not out of control. USF has accomplished much for rural areas. Extending support to high cost areas served by larger carriers raises complex issues that require further investigation. It is the wireless CETC funding that is out of control, lacks a coherent theoretical basis, and does not achieve intended results.

Numerous parties have cited the exponential growth in USF disbursements received by wireless CETCs. Chairman Martin's February 20, 2007 presentation at the Joint Board *en banc* hearing has been widely repeated. The numbers are undeniable, and the real question is whether these dollars are an effective way to promote universal service. They are not, for a combination of factors. A flawed ETC designation process,

distributions based on physical addresses attached to handsets, combined with the identical support rule have produced a fund whose growth bears little relation to the goals of universal service. I will address each of these in turn.

ETC designation

The CETC characterization of the ETC designation process is ironic. Alltel describes it as

> "Make no mistake – wireless carriers are receiving funds only when we step up and are held accountable to our commitment to serve the entire geographic area, including outlying areas as well as towns and cities. To obtain ETC (eligible telecommunications carrier) designation and retain that status, we are required to make detailed annual demonstrations, to the FCC and to most state commissions that we are spending the money to build and upgrade cell sites throughout our service areas, and to maintain and promote top-quality service to consumers in those areas. We are held accountable for every universal service dollar we spend."[15]

This purported effective regulatory oversight should be contrasted with Alltel's view of how these same regulators oversee the embedded costs of the ILECs:

> "However, small ILECs in the United States continue to be regulated under full-cost recovery RoR mechanisms. And given the relatively small size of many of these companies, and the significant costs of monitoring RoR companies and engaging in RoR reviews, state rate cases are seldom performed. Retail prices for many firms have not changed in years, and in many instances decades. More importantly for the purposes of this proceeding, high-cost universal service reimbursement for small ILECs continues to be based on historical investments and historical costs."[16]

We are to believe that regulators cannot effectively monitor the actual costs of the small ILECs but can hold wireless CETCs "accountable for every universal service dollar." This disparity in regulatory effectiveness is presumed to exist, despite the fact that regulatory incentives and ability for good monitoring are stronger in the case of RoR and USF (where the regulators bear residual responsibility for the portion of costs that USF does not recover) than with wireless CETC funding (which has "tragedy of the commons" incentives for each state to designate more CETCs).

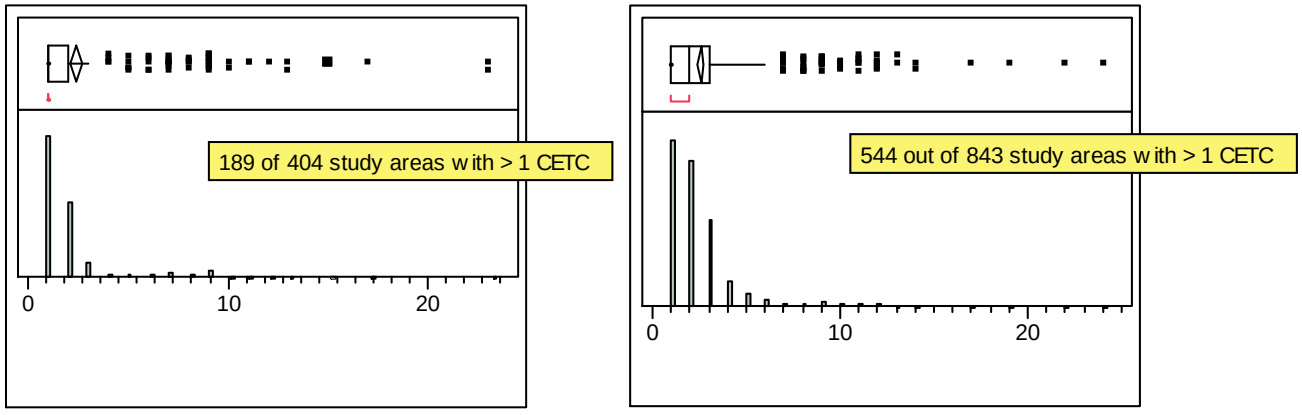
[15] Statement of Richard Massey, attached to Alltel comments, at pages 9-10.
[16] CostQuest paper, attached to Alltel comments, at pages 13-14.

More critically, what is the baseline for monitoring wireless CETC spending of USF dollars? Wireless networks have been deployed in rural areas prior to receiving USF and after receiving such funds. The *incremental investment* resulting from the receipt of USF is virtually impossible to determine. In theory, it should be the investments that take place that go beyond what carriers would have invested without such support. Unfortunately, there is no objective validation of this – the only measure available to regulators is what the wireless CETC claims it would have done without support. Such a system is inherently flawed.

As of 2Q 2007, the USAC lists 1431 Rural ILEC study area codes, of which 843 have CETCs, many with multiple CETCs. The distribution of the number of CETCs (where there are CETCs) by ILEC study area appears below:

The number of CETCs in Rural ILEC study areas[17]

2Q 2004 2Q 2007[18]



These distributions show how many ILEC study areas have various numbers of CETCs. Not only do more ILEC study areas have CETCs, but within each study area, the number of CETCs is clearly increasing. In 2Q 2007, the maximum is 24ETCs and multiple CETCs are relatively common. This was predictable (and predicted) – competitive neutrality among wireless competitors naturally leads to multiple ETCs. As a result, USF is being used to support competition among wireless carriers more than it supports

[17] From USAC quarterly filings, table HC03.
[18] 59% of rural ILEC study areas have CETCs in 2007.

competition between wireless and wireline carriers. In the absence of clearly defined goals for wireless universal service support, what else could be expected?

Disbursements

Wireless CETCs receive support based on the number of handsets. As households increasingly subscribe to plans with shared minutes, the number of handsets increases, and so does support. The increased number of handsets does not proportionally increase network costs (since it is usage that drives most wireless network costs). There is a mismatch between the support received and the costs incurred.

Part of the explosive growth of wireless CETC funding is attributable to this multiple handset effect. While the wireless carriers undoubtedly have detailed data, the publicly available data does suggest what is happening.[19] I examined the USAC funding reports over the past three years. Confining the analysis to the high cost loop fund, for those ILEC study areas which have had CETCs throughout the period 2Q 2004 – 2Q 2007, yields 750 ILEC study areas with CETC lines and with ILEC lines < 50,000.[20] The following table provides some comparative data:

Changes in CETCs, CETC lines, and ILEC lines in rural areas from 2004 to 2007

	2Q 2004	2Q 2007	% change
# CETC study areas	1511	1873	24%
Total # ILEC lines	4,274,911	3,933,744	-8%
Total # CETC lines[21]	963,152	1,821,952	89%

[19] According to AT&T (based on TNS data), "over 13% of supported wireless CETC lines are in households that have at least three such lines, and over 8% are in households with *four* such lines." [AT&T ex parte filing with the Joint Board, WC Docket No. 05-337, CC Docket 96-45, March 22, 2007, footnote5, page 2]

[20] There are a number of CETCs receiving support in nonrural study areas – principally ICLS. This is itself a questionable universal service policy since the access support that this fund was designed to recover does not represent costs incurred by these CETCs. My focus, however, is on the high cost support in rural areas, and this comprises the bulk of CETC funding.

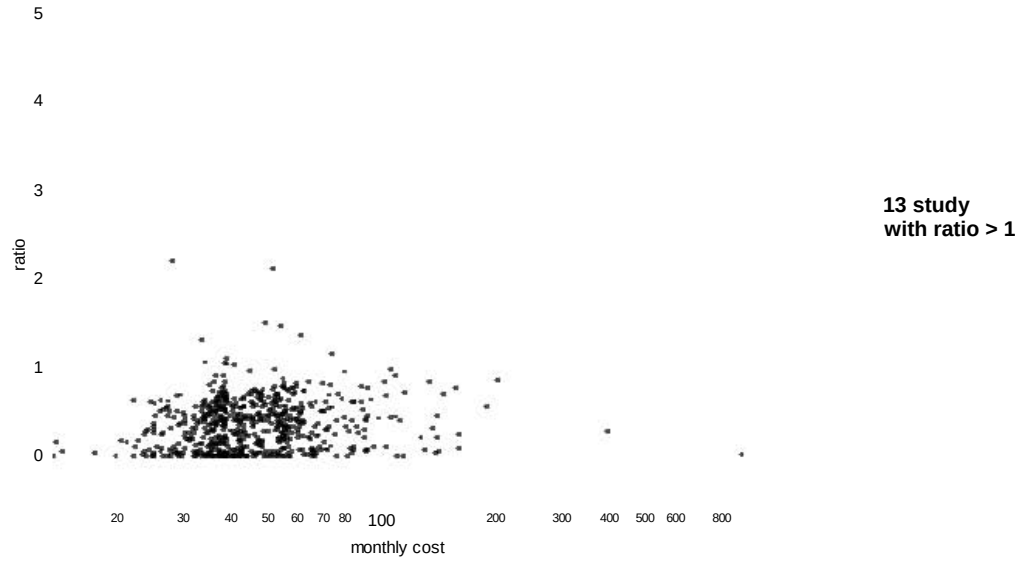
[21] The CETC lines are reported lines for CETCs that were either eligible for support at the time of the report or were not. Presumably, the difference is that some CETC information may be incomplete at the time of a report – the CETC study area has been designated but they are not yet eligible to receive support. If I restrict the analysis to only CETCs eligible to receive support, the increase in the number of lines is 114%.

Several things are evident from this table.

- CETC designated study areas increased, but the number of CETC lines increased far more rapidly.
- ILEC lines decreased but the CETC increase was not a simple replacement of wireline service with wireless service. Indeed, since the number of second lines has been decreasing (with the availability of broadband), there may be little service substitution at all.
- There is virtually no limit on the CETC "lines" available for support, other than the willingness of people to have a wireless handset. Indeed, if a marketing innovation were capable of convincing each wireless subscriber to have two handsets instead of one, CETC support would double.

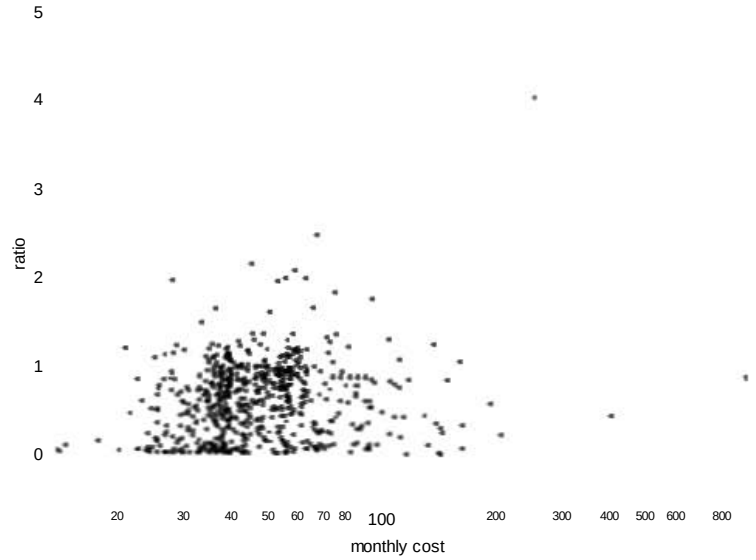
We get a similar picture by looking at individual study areas. The following graphs depict each ILEC study area in terms of its monthly cost of service and the ratio of the total number of CETC lines to the total number of ILEC lines.

Ratio of CETC lines to ILEC lines by study area (< 50,000 ILEC lines): 2Q 2004
Note: ratio = 1 means total CETC lines = ILEC lines in the study area
Note: the x axis shows the monthly ILEC cost (log scale) with the vertical line showing the threshold level for high cost support (115% of the national average loop cost)[22]
Bubble Plot of ratio by monthly cost Across Time ID Study Area



[22] There is a slight inaccuracy in these graphs – the cap on the rural ILEC high cost fund produces an "effective" national average loop cost used to calculate the 115% threshold for eligibility for receiving high cost loop support. This calculation changes annually, so the vertical blue line moves slightly rightwards over time. At the same time, each study area's loop cost also changes slightly over time. To simplify the graphs and use available data, I used 2005 costs for each study area and the 2005 threshold for receiving support. It is primarily the ratio of CETC lines to ILEC lines that has shifted over time – the threshold and monthly cost per line have changed only slightly.

3 Years Later: Ratio of CETC lines to ILEC lines by study area: 2Q 2007
Note: 1 outlier omitted (off the scale at CETC lines = 15xILEC lines)
Bubble Plot of ratio by monthly cost Across Time ID Study Area



88 study areas with ratio > 1

The upward drift of the points is evident. Points above the horizontal line represent study areas where the total number of CETC lines actually exceeds the number of ILEC lines. Points to the right of the vertical line are study areas eligible to receive high cost support (some of the areas to the left may be receiving ICLS support, since it is not tied to the monthly loop cost). The drift upwards of points represents a process out of control – increased wireless CETC support is driven by increased number of CETCs, increased number of CETC subscribers, and increased number of handsets per CETC subscriber. The resulting funding increase occurs without any demonstrable evidence that the costs of providing universal service are increasing.

An even clearer picture emerges if we focus the analysis on a particular ILEC study area. This data is available, but is somewhat costly to collect. This example comes from the Matanuska Telephone Association (MTA). It represents a valuable use of GIS

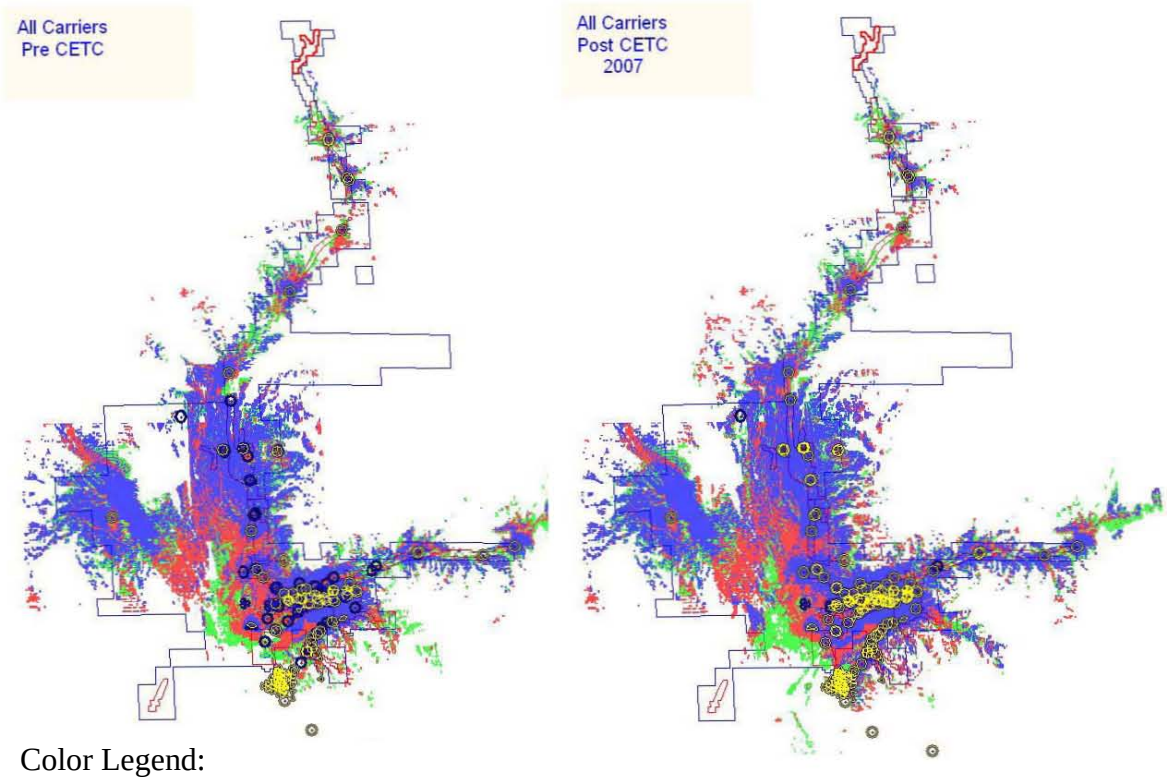
information to determine exactly what wireless coverage looks like and where there are gaps that might be suitable targets for support. The descriptive data for MTA shows:

ILEC lines and CETC lines in MTA's Study Area

Study Area	2Q 2004 lines	2Q 2007 lines
MTA (ILEC)	61,641	61,130
Alaska Digitel (CETC – eligible in both years)	868	6,143
Matanuska-Kenai, Inc. (MTA wireless, eligible in 2007 not 2004)	10,498	14,698
Dobson Cellular (eligible in 2007 not 2004)	21,856	27,665
ACS wireless (eligible in 2007, not listed in 2004)	NA[23]	13,923
Total CETC lines	33,212	62,429

[23] ACS Wireless provided service via roaming in 2004 and subsequently built out their network of towers.

Again, there is growth in both the number of CETCs and the number of lines per CETC. There is little evidence of substitution, as MTA's ILEC lines were relatively steady over the period. The CETC line growth has been explosive. What are the facts "on the ground?" The following maps show the wireless coverage area of these four wireless companies in 2003 and 2007:



Color Legend:
Blue = -75dbm avg or better
Red = -95 dem avg to -75
Green = -105 dbm avg
For this study, a signal level of -105 dbm or less is considered UnServed
The blue outline represents MTA's service area.

Note: Wireless carriers usually do not share information on the location and configuration of their equipment, so this information was gathered from 2nd and 3rd parties, and the accuracy cannot be guaranteed. The tower locations do not differentiate between analog and digital sites. There was significant migration from analog to digital service over this time frame.

These maps suggest that the geographic wireless coverage did not change much with the designation of four wireless CETCs (whose total supported line count exceeds that of

MTA's wireline service area). There is no doubt that the quality of service improved (particularly data service since many of the towers were built as part of a transition from analog to digital service). However, the support of multiple wireless CETCs appears to have primarily supported competition *between* these wireless carriers than extension of service to previously unserved areas. In fact, even service redundancy is not much improved since these carriers employ largely incompatible technologies.[24]

This is not to suggest that support for these wireless CETCs has been without benefit. Rather, it is questionable that the benefits have been worth the costs. Surely, there are more efficient ways to support wireless service, if that is a public policy goal. Failure to identify goals often leads to wasteful programs. In this case, most of the support dollars have gone to promoting investment by four wireless carriers to serve essentially the same area that they were already serving without support.

The Identical Support Rule

Under the guise of "competitive neutrality" the identical support rule provides equal per line support to CETCs as received by rural ILECs. A number of comments have observed that competitive neutrality is neither required by law, nor are CETCs and ILECs under equal service obligations. Further, the basis for the identical support rule is illogical. ILEC support is not derived from a per line cost of service – instead, the cost of service for an area is determined and then the per line support amount is calculated. This means that ILEC support is effectively capped by the cost of providing service.[25] Not so for the CETCs. Their support is simply derived from the calculated ILEC per line support. As CETC lines increase, so does CETC support, *regardless of whether or not CETC costs actually increase*. This decouples CETC support from any measure of either their own costs or changes in their costs over time.

Paradoxically, as ILECs lose lines to competition (or decreases in second lines used for data), CETC support actually rises. ILEC support does not. Assuming ILEC costs do not substantially change, ILEC per line support will increase to yield the same

[24] To an extent, the primary beneficiaries of these build-outs are urban residents that roam in this highly utilized vacation area. There is little evidence that the cumulative reach of the networks has increased much.

[25] This is aside from the various explicit caps that have been applied directly to the ILEC high cost fund.

total support. However, the identical support rule grants this increased per line support to wireless CETCs. Since their support is not cost based, their total support rises.

The mismatch of support and costs is further complicated by the use of subscriber addresses to determine support. There is no assurance that the wireless service will even work at the residential address of a wireless customer, yet support received will be equal to the wireline ILEC's cost of providing service to that actual location. Mobility compounds this mismatch – if a wireless subscriber moves to a new address while still under contract, their address may no longer be in the same area that is being used to calculate support for their wireless carrier. Disaggregation of support would only make matters worse, since the ILEC support would be more exactly calculated and then ported to the wireless CETC whose customer happens to live (or have previously lived) at that location.

I have pointed out repeatedly that wireless cost structures differ from wireline costs in fundamental ways. Smaller scale economies mean that high cost wireless areas probably do not match high cost wireline areas very well. Thus, if the objective of universal service is "comparable services for comparable rates" the identical support rule is dysfunctional. What is clearly needed is a way to determine, first, the need for support by wireless CETCs, and then a method to determine the amount of support required. The use of reverse auctions, cost models, or cost accounting can provide this information. The identical support rule cannot.

4. Conclusions

The Joint Board's query was broad and the comments reveal a wide variety of positions and numerous requests for expanding universal service support to additional areas, carriers, and/or services. There is no widespread agreement on any dimension of reform. That leaves the Joint Board in the difficult position of making some parties unhappy. One option is to look for a "solution" that makes everybody unhappy to a degree. That path may not serve the goals of universal service, however.

The pressure on the fund comes from two sources: first, the fund has grown to potentially unsustainable levels, and second, it is not clear that the fund is achieving the desired results (in the area of broadband). The fund's growth must be attributed to the rise

in wireless CETC support. The facts that wireless services are increasingly popular and important and that wireless carriers pay more into the fund than they take out are mostly irrelevant to the issues at hand. Universal service is about achieving public goals, not about equalizing support across technologies, carriers, or customers. The dysfunctional identical support rule is the basis for the rising wireless CETC support, and it needs to be changed.

Reverse auctions, cost models, or cost accounting can be applied to wireless CETCs in place of the identical support rule. There are important differences between these methods, but the Joint Board has ample information on which to choose a path. The important thing is that it chooses one – the current policy makes no sense. As part of making a choice, the Joint Board must articulate the nature and extent of the need to have USF support wireless networks. This is essential if such support is to be effective at achieving regulatory goals.

The remaining issues – disaggregation, GIS modeling, reform of rural/nonrural definitions, support of broadband – should not divert the Joint Board from the essential reforms above. The complexities need to be carefully considered. Targeting support to the highest cost areas risks increasing the total size of the fund and is inconsistent with many of the incentive regulation plans that carriers have voluntarily agreed to. Broadband is a multidimensional problem, encompassing subscription behavior, infrastructure deployment, and varying uses of broadband services of different speeds. It is not clear that USF is the most appropriate vehicle for increasing the use of broadband in rural areas. Some targeted type pilot programs may make sense, but they are not the core of universal service reform that the Joint Board is facing.