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December 2, 1997

HAND DELIVERY

Mr. David Waddell
Executive Secretary
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, TN 37243-0505

Re: Universal Service Generic Contested Case
Docket No. 97-00888

Dear Mr. Waddell:

Enclosed for filing in the above-referenced case are the original and thirteen copies of the Amended Direct Testimony of Donald F. Shepheard on behalf of Time Warner Communications of the Mid-South, L.P. Three pages of Exhibit B to Mr. Shepheard's direct testimony were inadvertently left out.

Time Warner Communications of the Mid-South, L.P. and the Tennessee Cable Telecommunications are not filing rebuttal testimony in the above referenced matter.

Copies are being served on counsel for interested parties.

Very truly yours,

FARRIS, MATHEWS, BRANAN & HELLEN, P.L.C.

By: Charles B. Welch, Jr./cg
Charles B. Welch, Jr.

CBWjr:cg

cc: Carolyn M. Marek
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BEFORE THE

TENNESSEE REGULATORY AUTHORITY

UNIVERSAL SERVICE GENERIC
CONTESTED CASE

DOCKET NO. 97-00888

AMENDED

DIRECT TESTIMONY

AND EXHIBITS

OF

DONALD F. SHEPHEARD

SUBMITTED ON BEHALF OF

TIME WARNER COMMUNICATIONS OF THE MID-SOUTH, L. P.

DECEMBER 2, 1997

BEFORE THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

DIRECT TESTIMONY OF DONALD F. SHEPHEARD

Q. Please state your name and address.

A. My name is Donald F. Shepheard and my business address is 290 Harbor Drive, Stamford, Connecticut 06902.

Q. By whom are you employed, what is your current position and what are your duties and responsibilities?

A. I am employed by Time Warner Communications as its Director, Federal Regulatory Affairs and Policy. In this position, I am responsible for managing Time Warner Communications' participation in all Federal regulatory activity, including FCC proceedings. In addition, I am responsible for the development of Time Warner Communications' public policy positions on key issues affecting our business, such as universal service, access charge reform, interconnection, and number portability.

Q. What is Time Warner Communications' relationship to Time Warner Communications of the Mid-South, L.P.?

A. Time Warner Communications is the managing general partner of Time Warner of the Mid-South Communications, L.P. Time Warner Communications, a division of Time

Warner Entertainment Company, L.P., has 19 telecommunications operating divisions in New York, North Carolina, Ohio, Wisconsin, Texas, California, Indiana, Hawaii, and Florida, in addition to Tennessee.

Q. How long have you been employed with Time Warner Communications?

A. I joined Time Warner Communications in August 1994.

Q. Please summarize your educational and professional background.

A. I received a Bachelor of Arts degree from the University of Vermont in 1970. From 1970 to 1984, I was employed by New England Telephone, where I was responsible for the development of pricing for new PBX, key system, and station products. I also prepared direct testimony to support these new product tariff filings, and served as a rate witness before state regulatory commissions. Following divestiture in 1984, I became part of the new NYNEX Corporation's central organization, which was known as the NYNEX Service Company. I was employed in various positions, including interstate rate analysis and planning; demand analysis and forecasting; and interstate market analysis. From 1993 until I left to join Time Warner Communications, I held the position of Director, Federal Regulatory Policy.

Q. What is the purpose of your direct testimony in this Docket?

A. I am testifying on behalf of Time Warner Communications of the Mid-South, L.P. (hereinafter known as "Time Warner") regarding universal service funding issues. Specifically, I will be addressing certain contested issues as identified in the joint Statement of Stipulations and Contested Issues, filed with the TRA by numerous parties to this proceeding on October 29, 1997. Specifically, I will be addressing Issue 3.d. as

to whether the TRA should adopt the Federal facilities requirements for determination of an Eligible Telecommunications Carrier (ETC). I will also address Issue 7 as to how the TRA should determine the affordability of rates for universal services. Finally, I will address Issue 9 as it pertains to the scope of universal service rates and the appropriate revenue benchmark to be used in conjunction with universal service cost models to determine the amount of universal service funding required.

Q. What are the Federal facilities requirements for ETCs?

A. The fundamental principle adopted by the FCC in its *Report and Order* on universal service (FCC 97-157) permits only a carrier that incurs the cost of providing service to a customer to receive the related universal service support. One of the basic principles necessary to achieve universal service goals, as adopted in the *Report and Order*, is that universal service support should be allocated to the carrier that incurs the cost of providing the relevant service. The *Report and Order* states expressly, "universal service support should be provided to the carrier that incurs the cost of providing service to a customer." (*Report and Order*, para. 162.) A second vital principle adopted in the *Report and Order* is the principle of competitive neutrality, that is, carriers are neither competitively advantaged nor disadvantaged by the facilities requirements.

Q. Should the TRA adopt the Federal facilities requirements for ETCs?

A. Yes, with some modification to insure that the carrier that incurs the cost of providing universal service receives the support. Time Warner believes that the FCC reached conclusions regarding the level of a carrier's use of its own facilities necessary to

qualify for universal service support that are contrary to their stated principles. Specifically, the FCC concluded that a carrier could satisfy the section 214(e) facilities requirement and qualify as an eligible carrier by relying on its own facilities only to provide access to operator services and obtain the remaining services designated for support from another carrier through resale. Clearly, if a carrier is only providing access to operator services, and is providing the remaining services designated for support from another carrier through resale, it is incurring only a small fraction of the total cost of the service to the customer. The reseller, however, will receive all of the related universal service support in direct contradiction with the principle that the carrier who incurs the cost of providing service to a customer should receive the related universal service support.

The FCC's conclusions regarding the level of a carrier's use of its own facilities necessary to qualify for universal service support are also inconsistent with the guiding principle of competitive neutrality. The *Report and Order* states that "competitive neutrality means that universal service support mechanisms and rules neither unfairly advantage nor disadvantage one provider over another..." (FCC 97-157, para. 47). The FCC's decision to provide universal service support to a reseller offering access to operator services over it own facilities but providing all other services through resale, significantly disadvantages other providers.

Q. How does the FCC's decision disadvantage other providers?

A. First, it disadvantages the carriers that are actually incurring the high cost for providing the services at issue (the incumbent local exchange carriers that are selling

the services other than operator access to the reseller at a wholesale discount). Second, it disadvantages new entrants seeking to enter the market as facilities-based providers who will incur significant cost to provide services. In contrast, resellers offering access to operator services will be eligible for that support by incurring only a relatively insignificant cost associated with providing access to operator services.

Q. Do you have any other concerns about the FCC's conclusions?

A. Yes. The FCC's conclusion that a carrier could satisfy the facilities requirement by using its own facilities to provide access to operator services while providing the remaining services designated for support through resale also violates section 254(e) of the Federal Act, which requires that a carrier receiving universal service support to use that support for the facilities and support for which it is intended. Section 254(e) states, in part, as follows:

> A carrier that receives such support shall use that support only for the provision, maintenance, and upgrading for facilities for which the support is intended.

The FCC's policy allows certain resellers to obtain universal service support, even though it is clear that many of these carriers will not use the bulk of such support to maintain or upgrade facilities. In part, this is attributable to the fact that the services that the reseller will provide on a facilities basis are not high-cost, and accordingly, the high cost will be born by a second carrier. Not surprisingly, a carrier that only provides access to operator services through its own facilities would be unlikely to use more than a relatively insignificant amount of that support to provide, maintain and upgrade its operator access services and their related facilities. At best, the reseller

would spend that money on marketing and software additions, thereby frustrating, not enhancing, universal service goals.

Q. Do current rates for universal service, as set by the TRA, meet the standards of the 1996 Telecommunications Act for just, reasonable, and affordable rates?

A. Assuming that current rates were established in accordance with Tennessee Code Ann. 65-5-201, and given the high household subscribership levels in the State of Tennessee at the current rates (94% in 1996. Source: FCC Monitoring Report, May 1997), current rates, at a minimum, should be presumed to meet the Act's standards. It should be noted, however, that since rates for basic universal service have traditionally been artificially depressed, higher rates most probably could meet the "just, reasonable, and affordable" standard with little or no impact on subscribership levels.

Q. Does the existence of programs to support low income consumers further the argument that current rates meet the affordability requirement in Tennessee?

A. Yes. The existence of programs to support low income users ensures the availability of services for those who could not afford such services at virtually any rate, while the current rates maintain affordability to the broad base of consumers.

Q. Are there other factors that should be considered in determining affordability of universal service rates?

A. Yes. The *Telecommunications Act of 1996* explicitly requires that "affordability" be included as a consideration in the development of a comprehensive universal service support mechanism. The Federal-State Joint Board on Universal Service expressly concluded that customer income level is a factor that should be examined when

addressing affordability. In its *Report and Order* on universal service, the FCC agreed with the Joint Board's conclusion, and further, defined affordability as containing both an absolute component, which takes into account an individual's means to subscribe to universal service, and a relative component, which takes into account whether consumers are spending a disproportionate amount of their income on telephone services.

Thus, to the extent certain consumers "have the means for" fully cost-based rates for universal service that does not create a "serious detriment" for those consumers, such rates must be considered affordable under the 1996 Act. What is "affordable" to a low-income household is not the same as what is "affordable" to affluent households. Thus, in developing a universal service support mechanism that conforms to the statutory requirement that basic local telephone service be "affordable," it is necessary that household income somehow be included among the criteria under which the extent of universal service support is to be determined.

Q. What are the consequences of not considering income level as a factor in determining affordability of universal service rates?

A. Failure on the part of regulators to consider and apply an income test is not only inconsistent with the statutory requirement regarding "affordability," it is also highly inefficient as a matter of economic policy. Subsidizing consumers who can fully afford to pay the entire cost of their telephone service imposes significant costs and economic burdens upon other segments of the economy, while producing no offsetting economic or social benefit. Time Warner has included as Exhibit B a study entitled Defining the

Universal Service "Affordability" Requirement: A Proposal for Considering Community Income As a Factor in Universal Service Support. This study analyzes average income by Census Block Group (CBG), as available from Census Bureau Data, in conjunction with cost model results to determine universal service funding requirements in high-cost, high-income areas. As demonstrated in this study, approximately 20-30% of the aggregate universal service funding requirement for high-cost areas could be eliminated if the support were limited to households with incomes below the 70th income percentile. Adopting such a policy could mean a savings of up to $4.5-billion in annual support nationally, and up to $115 million in annual support for the State of Tennessee. (See Exhibit A for Tennessee study results.) Clearly, consumers in the top 30 percent income bracket "have the means for" paying cost-based rates without "serious detriment," i.e., those rates would not represent a disproportionate share of income. Cost-based rates in high-income areas would thus meet the affordability standard in the 1996 Telecommunications Act.

The proposal discussed in this study is entirely compatible with and accommodates the Joint Board's Recommendation and the FCC's Report and Order relative to affordability and use of a revenue benchmark. The analysis demonstrates that there is a clear need to consider not only the *cost* of serving individual geographic areas, but also the *income* of the areas in question.

Q. What specific proposals should the TRA consider adopting to account for community income in determining universal service funding requirements?

A. First, the TRA should establish the 70th percentile for median CBG income as a

threshold criterion for high-cost support eligibility, using relative income level with respect to the statewide income distribution. However, the TRA could alternatively use a combination of state-specific and national income rankings rather than either a state-specific or national distribution, in setting eligibility thresholds. For example, if there are high-cost areas within a state which are above the 70th percentile in income for that state, but below the *national* median income, the TRA may determine that continued subsidies are warranted for such areas.

Second, consumers within designated high-cost, high-income areas with income below the state median income should qualify for universal service at the current subsidized rate. Of course, individual households in such areas that satisfy the eligibility requirements for current income-targeted support programs, such as Lifeline and Link-up, can still qualify for and receive these benefits.

Third, to avoid rate shock, the TRA should establish appropriate transition plans that would allow carriers to move rates in high-cost, high-income areas toward their full, forward-looking costs. For extremely high-cost areas, the TRA may want to cap rates at a maximum level.

Q. What is the purpose of the revenue benchmark?

A. The revenue benchmark is an important determinant of the amount of state funding required to meet the universal service goals of the Telecommunications Act. It represents the statewide average revenue per line which is available to support the per-line cost within individual designated service areas. If the revenue benchmark is equal to or greater than the cost, no universal service funding is necessary in those areas. If

the revenue benchmark is below the per-line cost, than support may be required from an explicit universal service fund.

Q. What revenue should the TRA include in the revenue benchmark?

A. Revenues derived from each of the following contributes to the recovery of basic residential service costs, and therefore should be included in the calculation of the revenue benchmark:

- Basic Service Rate
- Federal and State Access Charges
- Federal Universal Service Fund
- Discretionary Local Services, i.e., custom calling and CLASS services.

Q. Please explain your recommendation with regard to the Basic Service Rate.

A. The Basic Service Rate would be the maximum statewide rate for basic local exchange service deemed to be affordable to the general body of ratepayers by the TRA. To the extent the TRA believes single-line business service rates should be included in the definition for universal service, separate monthly basic service rates would be established for residential and for single-line business services.

Q. Please describe your recommendation with respect to Federal and State access charges.

A. With respect to Federal access charges, current FCC Part 36 Separations Rules allocate approximately 25 percent of the cost of the local loop to the interstate jurisdiction, while Part 69 Rules govern the recovery of such costs. Since forward-looking cost models will develop costs for universal services on a total, unseparated basis, the TRA

must consider these interstate revenues as part of the revenue benchmark. The most direct recovery is through the interstate subscriber line charge, which is billed directly to residential and business end users. The residential and single-line business SLC is currently capped by the FCC's rules at $3.50 (47 CFR; 69.203). The Federal carrier common line charge (CCLC) is a component of the per-minute charges paid by long-distance carriers to local telephone companies for the origination and termination of interstate toll traffic to local exchanges. The CCLC is intended to recover a telephone company's fixed costs of providing residential local exchange access, allocated to the interstate jurisdiction, over and above the $3.50 cap on residential subscriber line charges. (See generally, 47 C.F.R. Part 69.) For example, BellSouth's current multi-line business SLC is $6.97 per line per month. (BellSouth Telecommunications, Inc.; Tan. H. FCC N0.1, Page 4-7; Effective July 1, 1997) Since the multi-line business SLC is designed to recover the full fixed cost per line allocated to the interstate jurisdiction (See FCC 97-158 @paras. 77-88), and because the residential SLC remains capped at $3.50 per month, an average of $3.47 per line per month is recovered from the per-minute CCLC. Therefore, in addition to the $3.50 contribution from the SLC, the CCLC contributes another $3.47 per line per month to the recovery of residential and single-line business total costs.

Q. Are there any other Federal access charges that should be included in the state revenue benchmark?

A. Yes. Earlier this year, the FCC concluded its Access Reform proceeding. To the extent that Common Line revenues are not recovered through subscriber line charges,

the *Access Reform Order* (FCC 97-158) established a flat, monthly Primary Interexchange Carrier Charge (PICC) to be assessed on the end user's presubscribed interexchange carrier. The single-line PICC is to be phased-in beginning January 1, 1998, and will ultimately replace the CCLC, recovering the difference between revenues collected through the SLC and the revenues allowed under the FCC's price-cap rules (originally designed to recover average interstate per-line costs allocated to primary residential and single-line business lines). To the extent that revenue from SLC ceilings and the PICC ceilings on primary residence/single-line business lines do not recover the full amount allowed by the price-cap rules, the shortfall may be recovered through a PICC on multiline business and non-primary residential lines, subject to phased-in price ceilings. Thus, the revenue generated from interstate access services, which directly support the total costs of providing universal services includes subscriber line charges (SLC), carrier common line charges (CCLC), and primary interexchange carrier charges (PICC). These revenues should be included in the revenue benchmark.

Q. What is the Federal Universal Service Fund (USF), and are Federal USF subsidy amounts available to the states?

A. States, including Tennessee, may obtain up to 25 percent of total high-cost service support requirements from the Federal USF. (FCC 97-157@par. 269.) The new rules adopted by the FCC in the Universal Service Order with respect to the high-cost Federal USF become effective in 1999. BellSouth and Sprint do not currently obtain universal service support for Tennessee from the existing Federal USF. However, to

the extent that either company does so in the future under the new rules, such amounts should be included (net of any offsetting reductions to Federal access charges) in calculating the available revenue sources offsetting State USF requirements.

Q. Please describe your recommendations for including discretionary local services in the revenue benchmark.

A. Revenues from custom calling (e.g., call waiting; call forwarding) and CLASS (Custom Local Area Signaling Service - e.g., calling number identification; call tracking service) services should be reflected in determining total Tennessee USF subsidy requirements. Revenues from these services contribute to the joint and common costs they share with basic services, and are characterized by relatively low incremental costs. In addition, the competitive characteristics of basic local and discretionary services are not separable. Discretionary services embedded within the switching functionality can only be economically provided by the basic local exchange provider. To the extent that the revenue from discretionary services contributes to the recovery of below-cost basic service rates, all competitive providers have an equal opportunity to decide how these services can best be priced and packaged to maximize revenue recovery. Therefore, both the cost and the revenue for basic and discretionary services should be considered in determining necessary Tennessee USF subsidy requirements.

Q. Has Time Warner Communications previously argued that discretionary service revenues be used to offset universal service subsidy requirements?

A. Yes. Time Warner Communications made a similar recommendation to the Joint Board and FCC in the Federal universal service proceedings (CC Docket No. 96-45).

Q. Was this recommendation adopted by the FCC?

A. Yes. In the FCC's universal service *Report and Order* (FCC 97-157), the FCC agreed with Time Warner's recommendation that the amount of support that a carrier needs to serve a high-cost area should reflect the revenues that the carrier receives from discretionary local services. (See FCC 97-157 @ par. 260.) The FCC reasoned that:

> Revenues from services in addition to the supported services should, and do, contribute to the joint and common costs they share with the supported services. Moreover, the former services also use the same facilities as the supported services, and it is often impractical, if not impossible, to allocate the costs of facilities between the supported services and other services. For example, the same switch is used to provide both supported services and discretionary services....Therefore, it would be difficult for the [cost] models to extract the costs of the switch allocated to the provision of discretionary services. (FCC 97-157 @par. 261)

Q. Are there other sources of contribution the TRA should consider in determining the size of a Tennessee universal service fund?

A. Yes. In comparing the statewide revenue benchmark to the costs for specific designated service areas, those areas where the revenue benchmark is below costs will require universal service support funding. However, before the TRA resorts to the use of the explicit USF to provide all of this support requirement, it should use the contribution generated from those residential services in designated service areas where the revenue benchmark <u>exceeds</u> costs.

Q. Why is it appropriate to include this offset in the USF calculation?

A. The offset represents *additional* contribution over and above the ILEC's costs. If not applied to the support required for services in below-cost areas, the additional contribution from these above-cost residential services will be used to fund reductions in its competitive services, essentially requiring the ILEC competitors to fund its rate reductions targeted to the very services for which they compete.

Q. Is this "additional contribution" sustainable in a competitive environment?

A. Probably not in the long run when a robust competitive market exists for residential services, but certainly it is sustainable for the foreseeable future. It is highly unlikely that facilities-based competition will erode this source of contribution in the near term. Initial competition for residential services will most likely be in the form of resale of ILEC services, in which case the ILEC will continue to draw from the USF for below-cost services or maintain its margins for the above-cost services. Since facilities-based competition for residential services is unlikely to occur in the near-term to any appreciable degree, the TRA can evaluate the competitive environment as part of a periodic review of the universal service program. As an additional safety net, ILECs can always petition the TRA to increase the USF at any time, if it can demonstrate significant erosion in this contribution due to facilities-based competition.

Q. What time period should be used to calculate the revenue benchmark?

A. The most recent twelve months prior to the TRA's decision in this case should be used to calculate the revenue benchmark.

Q. Does this conclude your testimony?

A. Yes.

High-Cost Support for High Income Households
State of Tennessee

High-Cost Support for CBGs with Household Incomes
In the **Highest 30%** in Tennessee

Revenue Benchmark	Aggregate Annual High Cost Subsidy		
	All CBGs	**CBGs with Highest 30% Household Income**	**Percent to High-Income CBGs**
$20	$391,293,772	$277,007,527	29.2%
$30	$214,160,251	$163,984,815	23.4%
$40	$113,374,821	$93,680,417	17.4%

High-Cost Support for CBGs with Household Incomes
Above the **Median Level** in Tennessee

Revenue Benchmark	Aggregate Annual High Cost Subsidy		
	All CBGs	**CBGs with Highest 50% Household Income**	**Percent to High-Income CBGs**
$20	$391,293,772	$181,929,528	53.5%
$30	$214,160,251	$108,537,054	49.3%
$40	$113,374,821	$63,225,035	44.2%

High-Cost Support for CBGs with Household Incomes
In the **Highest 10%** in Tennessee

Revenue Benchmark	Aggregate Annual High Cost Subsidy		
	All CBGs	**CBGs with Highest 10% Household Income**	**Percent to High-Income CBGs**
$20	$391,293,772	$358,799,780	8.3%
$30	$214,160,251	$202,523,389	5.4%
$40	$113,374,821	$110,026,017	3.0%

Sources: BCM2, 1990 Census of Population and Housing Summary Tape File 3A

DEFINING THE UNIVERSAL SERVICE "AFFORDABILITY" REQUIREMENT

A Proposal for Considering Community Income As a Factor in Universal Service Support[1]

The extent to which basic local telephone service is "affordable" to an individual consumer is critically dependent upon that consumer's relative income and wealth.

The *Telecommunications Act of 1996* explicitly requires that "affordability" be included as a consideration in the development of a comprehensive universal service support mechanism: "Quality and rates — Quality services should be available at just, reasonable, and *affordable* rates."[2] Taking its cue from the legislation, the Federal-State Joint Board on Universal Service (Joint Board), in its November 8, 1996 *Recommended Decision* on Universal Service policy, expressly concluded that "[c]ustomer income level is a factor that should be examined when addressing affordability."[3] The FCC's *Report and Order* in its universal service proceeding agreed with the Joint Board's conclusion.[4] Further, the FCC agreed that the "definition of affordability contains both an absolute component ('to have enough or the means for'), which takes into account an individual's means to subscribe to universal service, and a relative component ('to bear the cost of without serious detriment'), which takes into account whether consumers are spending a disproportionate amount of their income on telephone services."[5]

Thus, to the extent certain consumers "have the means for" fully cost-based rates for universal service that does not create a "serious detriment" for those consumers, such rates must be considered affordable under the 1996 Act. The extent to which any given product or service is

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[1] This paper was prepared on behalf of Time Warner Communications, Inc. under the direction of Donald Shepheard, Director Federal Regulatory Affairs and Policy, with the assistance of Dr. Lee L. Selwyn, Susan M. Baldwin, and Melissa N. Markley, respectively, President, Vice President, and Analyst of Economics and Technology, Inc., Boston, Massachusetts 02108.

[2] 47 U.S.C. § 254(b)(1). Emphasis supplied.

[3] *In the Matter of Federal-State Joint Board on Universal Service*, Recommended Decision, CC Docket No. 96-45, released November 8, 1996 (hereinafter "Recommended Decision"), at ¶ 129.

[4] *In the Matter of Federal-State Joint Board on Universal Service*, Report and Order, CC Docket No. 96-45, released May 8, 1997, at ¶ 115.

[5] Report and Order, at ¶ 110.

"affordable" obviously depends heavily upon the individual consumer's income and wealth; what is "affordable" to a low-income household is not the same as what is "affordable" to affluent households.[6] Thus, in developing a universal service support mechanism that conforms to the statutory requirement that basic local telephone service be "affordable," it is necessary that household income somehow be included among the criteria under which the extent of universal service support is to be determined.

In fact, most states and the FCC currently apply income criteria in determining eligibility for income-targeted support programs such as "lifeline" and "Link-up America." For these programs, income (and other eligibility metrics) are determined on a customer-by-customer basis. These income-related funding schemes would not be affected by the creation of a formal universal service support mechanism, although the amount of such customer-specific support might change.

Both the FCC (in its March 8, 1996 NPRM) and the Joint Board (in its November 8, 1996 *Recommended Decision*) have advocated the use of so-called "cost proxy models" as a means for efficiently estimating the per-line incremental cost and the associated support requirement for a given geographical area.[7] In its *Report and Order*, the FCC provided a timetable for further proceedings to adopt a forward-looking, cost methodology by August 1998.[8] The various cost proxy models that have been offered examine costs at a highly granular level, in most cases with respect to geographic areas known as "Census Block Groups" (CBGs). A CBG is a demographic unit developed by the US Census Bureau that is described as including "usually between 250 and 550 housing units, with the ideal size being 400 housing units."[9] There are approximately 200,000 CBGs nationwide. The CBG is a basic unit of Census aggregation, and is generally designed to embrace an area containing a relatively homogeneous population (with respect to geography, demographics, etc.) Thus, the *median* household income for a given CBG is generally representative of the *individual* household incomes within that CBG.

While the various cost proxy models undertake to simulate the structure of the local telephone service plant, and in so doing to estimate the per-access line cost of local telephone service on a forward-looking basis, none of the models that have been submitted in the FCC's proceeding consider the *income* of the households that are being examined as to their eligibility for high cost support. Significantly, however, such CBG-specific income data is routinely collected and reported by the Census Bureau, and can provide an additional benchmark against which the support requirement can be evaluated.

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[6] Report and Order, at ¶ 115.

7. *Notice of Proposed Rulemaking and Order Establishing Joint Board*, CC Docket No. 96-45, released March 8, 1996 at ¶¶ 31-34; *Recommended Decision*, at ¶¶ 7, 184-185.

[8] Report and Order, at ¶ 245.

9. *1990 Census of Population and Housing, Summary Population and Housing Characteristics*, New York, at A-3 to A-5.

Subsidization of basic local telephone service without regard to income levels will impose inefficient economic burdens across all segments of the US telecommunications industry, will increase the costs of entry, and will diminish competition overall.

Failure on the part of state and federal regulators to consider and apply an income test is not only inconsistent with the statutory requirement regarding "affordability," it is also highly inefficient as a matter of economic policy. Subsidizing consumers who can fully afford to pay the entire cost of their telephone service — and whose decision to take service is unaffected by the presence of such a subsidy — serves only to impose significant costs and economic burdens upon other segments of the economy while producing no offsetting economic or social benefit. Among other things, a funding obligation that is larger than that which is necessary to achieve the universal service goal will serve to increase the costs of and barriers to entry, suppress demand for price-elastic services, and diminish the prospects for effective competition overall. The magnitude of these costs and deadweight losses may be considerable: As demonstrated below, approximately 20-30% of the aggregate universal service funding requirement for high-cost areas (depending on the level of the revenue benchmark) could be eliminated if the support were limited to households with incomes below the 70th income percentile. This could mean that up to approximately $4.5-billion in support burden could be avoided annually if such a policy were adopted.

Application of the income-blind cost proxy models would produce the anomalous result of *subsidizing* areas of extremely high household incomes merely because the cost of providing basic telephone service in those areas happens to exceed the nominal revenue benchmark that is ultimately adopted.[10] Table 1 below provides examples of just of few of the numerous high-income areas that would receive subsidies *even at a $40 per month revenue benchmark.* Appendix A provides additional examples of high-income communities in each of the states that would receive high-cost support if no income-dependent affordability criterion is incorporated into the design of a universal service support program.

That high-income areas also exhibit high-cost characteristics should not be unexpected. Wealthy suburban communities are frequently characterized by large multi-acre lots and hilly terrains. As relatively low density areas, the cost proxies for these CBGs are often well above average and in fact considerably in excess of even the highest support threshold. Thus, for a household in Bedford, New York with a median income of $120,487, a $51.11 per month local telephone bill cannot be considered as somehow failing to satisfy the "affordability" requirement of

[10] The FCC has determined that the revenue benchmark should comprise local service, access and other discretionary revenue. The FCC estimates the revenue benchmark for residential services to be $31.

the *Telecommunications Act*, yet could receive as much as $145,221 in annual subsidies if income is ignored.

Table 1

High-Cost Support Would Flow to Wealthy Communities Under Pending USF Proposals:

Illustrative List of Areas Eligible for High-Cost Support

Community	Median Household Income	BCM2 Proxy Cost	Annual per-line subsidy		
			$20 level	$30 level	$40 level
Bedford, New York	$120,487	$51.11	$145,221	$98,541	$51,861
Boca Grande, Florida	$131,981	$43.00	$16,008	$9,048	$2,088
Casper North, Wyoming	$102,264	$213.95	$4,655	$4,415	$4,175
Corpus Christi, Texas	$126,113	$40.85	$24,520	$12,760	$1,000
Dover, Massachusetts	$104,977	$40.94	$137,953	$72,073	$6,193
Greenwich, Connecticut	$150,001	$43.11	$140,047	$79,447	$18,847
Grosse Pointe Farms, Michigan	$150,001	$42.97	$38,314	$21,634	$4,954
Hilton Head, South Carolina	$118,422	$34.74	$7,252	$2,332	$0
Lake Wales, Florida	$134,408	$57.02	$43,536	$31,776	$20,016
Los Alamos, New Mexico	$81,282	$78.69	$372,564	$309,084	$245,604
McLean, Virginia	$126,101	$34.15	$101,710	$29,830	$0
Mercer Island, Washington	$89,540	$40.58	$27,413	$14,093	$773
Nashville-Davidson, Tennessee	$123,582	$37.79	$56,786	$24,866	$0
Riverside, Missouri	$150,001	$95.03	$11,705	$10,145	$8,585
Roswell-Alpha Retta, Georgia	$150,001	$38.78	$49,805	$23,285	$0
Scarsdale, New York	$119,342	$40.61	$59,604	$30,684	$1,764
Simi Valley, California	$125,400	$57.21	$158,961	$116,241	$73,521
Vail, Colorado	$102,941	$66.08	$37,601	$29,441	$21,281

Sources: BCM2, 1990 Census of Population and Housing Summary Tape File 3A.

While these extreme cases represent a small fraction of the more than 200,000 CBGs nationwide, more generally communities with relatively (and not necessarily extremely) high income households would still receive substantial subsidies under an income-blind application of the unadjusted BCM2 cost proxies. The tables in the following section of this paper highlight this point.

While this analysis is based upon proxy costs as developed by the BCM2[11] without making any of the various corrections that ETI and others have recommended,[12] there is no reason to expect the pattern or overall magnitude of these results to be substantially different if another cost proxy model, such as the Hatfield Model or the new BCPM, is adopted.[13]

Universal service support should be limited to CBGs whose household income falls below the 70th percentile of the income level for that state.

For the various reasons discussed here, it is appropriate for the Commission to include *CBG Household Income* as a threshold criterion for each area's eligibility to receive funding. Under this approach, funding would be limited to those CBGs whose median household income is below the threshold level. One such threshold might be the 70th percentile of the household income in each state. CBGs whose median household income exceeded this threshold (i.e., whose incomes were in the top 30th percentile) would simply be ineligible for high-cost funding irrespective of their individual proxy cost levels. As the analysis shown in Table 2 demonstrates, adoption of this income threshold would cut the overall universal service support requirement by approximately a quarter at the $30 revenue benchmark. At the $20 revenue benchmark, the annual universal service support under an income-blind approach would be $14.7-billion; if CBGs with above-median household incomes are excluded for eligibility, the support level drops to only $10.2-billion, *approximately $4.5-billion less!*

Clearly, consumers in the top 30 percent income bracket "have the means for" paying cost-based rates without "serious detriment," i.e., those rates would not represent a disproportionate share of income. Cost-based rates in high-income areas would thus meet the affordability standard in the 1996 Telecommunications Act.

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11. Joint Submission by Sprint Corporation, U S West, Inc., CC Docket No. 96-45, July 3, 1996.

12. See e.g., *Converging on a Cost Proxy Model for Primary Line Basic Residential Service: A Blueprint for Designing a Competitively Neutral Universal Service Fund*, Baldwin, Susan M. and Lee L. Selwyn, August 1996; *Continuing Evaluation of Cost Proxy Models for Sizing the Universal Service Fund: Analysis of the Similarities and Differences between the Hatfield Model and the BCM2*, Baldwin, Susan M. and Lee L. Selwyn, October 1996; *The Use of Forward-Looking Economic Cost Proxy Models*, Baldwin, Susan M. and Lee L. Selwyn, February 1997.

13. We have also focused our analysis on the provision of high-cost support to households. We recognize that the FCC has decided to adopt the Joint Board's recommendation that single-line businesses be eligible for high-cost support. Report and Order, at ¶¶ 95-96.

Table 2

High-Cost Support for CBGs with Household Incomes
In the Highest 30% in Each State

Revenue Benchmark	Aggregate Annual High Cost Subsidy		
	Annual USF Subsidy to All CBGs under an Income-Blind Approach	**Annual Subsidy going to CBGs with Highest 30% of Household Income**	**Percent of Total Subsidy going to High-Income CBGs**
$20	$14,664,182,818	$4,468,284,015	30.5%
$30	$7,424,505,733	$1,765,844,278	23.8%
$40	$4,258,662,622	$780,669,907	18.3%

Sources: BCM2, 1990 Census of Population and Housing Summary Tape File 3A

While we believe that the 70th percentile is an appropriate income threshold, alternate income thresholds could also be considered. Estimates were therfore developed of the aggregate BCM2 subsidy flowing to CBGs in the top 50% and top 10%, respectively, of incomes in each state. These results are presented in Tables 3 and 4 below.

Table 3

High-Cost Support for CBGs with Household Incomes
Above the Median Level in Each State

	Aggregate Annual High Cost Subsidy		
Revenue Benchmark	**Annual USF Subsidy to All CBGs under an Income-Blind Approach**	**Annual Subsidy going to CBGs with Above-Median Household Income**	**Percent of Total Subsidy going to High-Income CBGs**
$20	$14,664,182,818	$7,900,816,877	53.9%
$30	$7,424,505,733	$3,563,607,287	48.0%
$40	$4,258,662,622	$1,807,377,281	42.4%
Sources: BCM2, 1990 Census of Population and Housing Summary Tape File 3A			

Table 4

High-Cost Support for CBGs with Household Incomes
In the Highest 10% in Each State

	Aggregate Annual High Cost Subsidy		
Revenue Benchmark	**Annual USF Subsidy to All CBGs under an Income-Blind Approach**	**Annual Subsidy going to CBGs with Highest 10% of Household Income**	**Percent of Total Subsidy going to High-Income CBGs**
$20	$14,664,182,818	$1,312,135,581	9.0%
$30	$7,424,505,733	$412,468,003	5.6%
$40	$4,258,662,622	$136,070,562	3.2%
Sources: BCM2, 1990 Census of Population and Housing Summary Tape File 3A			

Special consideration may need to be given to low-income consumers within high-cost, high-income areas.

A safety net should be provided for those consumers who live in a high-cost, high-income area, yet whose income level may be below that at which full, cost-based rates would be considered affordable. While there are many communities that tend to be homogeneous with respect to income level, many others may be characterized as having a wide range of income groups. The potential for wide income disparity will be minimized, however, by the use of smaller, discrete geographic areas, such as census block groups, to determine universal service funding. As discussed above, since CBGs are designed to capture areas with homogeneous demographics, the likelihood of broad income disparity within CBGs is minimal. Nevertheless, it may be necessary to provide a safety net for such individuals. For example, any consumer living within a designated high-cost, high-income area (i.e., above the 70th percentile within each state), whose income is below the median income for that state, would continue to pay the subsidized rate, as specified by the state commission, in place of the full, cost-based rate. Such consumers would provide the state USF administrator with a copy of his/her most recent federal or state income tax return (which would be kept strictly confidential) and the identity of their local service provider. The USF administrator would then notify the local service provider as to which customers qualified for the subsidized rate. The difference between the cost-based rate and the subsidized rate would be provided to the eligible local service carrier from the USF. The number of customers to qualify under this exception is not likely to create an undue administrative burden.

State commissions should establish a transition plan to full, cost-based rates in designated high-cost, high-income areas.

To avoid rate shock in those high-cost, high-income areas where a "gap" has been identified between the forward-looking cost of providing service and current rates for universal service allowed by the state commission, a transition plan can be established that would move rates toward full cost recovery over time. The length of such a transition plan would be governed by the degree of gap between current rates and costs, i.e., the larger the gap, the longer the transition. Until the gap is eliminated, eligible local service carriers would continue to receive USF support, albeit at a declining rate.

Without an income parameter, a proxy-cost model-based USF will provide massive amounts of support to high-income communities.

The USF support requirement for each state at each of the three benchmarks (50th, 70th, and 90th percentiles) is shown in Table B-1 in Appendix B. Incorporating income as a measure of affordability demonstrates that a substantial number of households do not require high cost support. Because none of the pending cost proxy models presently take income into consideration, they all vastly overstate the level of high cost support that is needed to achieve statutory universal service goals.

Depending upon the income guideline selected and assuming, for example, a $30 support level, the national USF, as computed by the BCM2, would provide $412.5-million annually to households with incomes in the top 10% of the CBGs; $1.76-billion to the top 30%, or $3.56-billion to the highest-income 50% of US households. Appendix B provides a detailed description of the methodology used and also includes a table with the data and detailed results separately for each state.

Based upon a review of the extensive overlap that exists between high-cost and high-income areas, federal and state regulators should establish income guidelines so that public monies are directed specifically to those communities that require such support in order for basic telephone service to be priced at levels that they can afford. Residents of Vail, Colorado; Greenwich, Connecticut; Boca Grande, Florida; Scarsdale, New York; and the other communities illustrated in Appendix A, for example, do not require that their telephone rates be subsidized in order that they can continue to "afford" basic service. An examination of some of the particular communities that would be eligible for high cost support — unless regulators establish appropriate income guidelines — underscores the fact that the USF would be overly broad and provide support where it simply is not needed.

Recommendation

The proposal discussed in this paper is entirely compatible with and accommodates the Joint Board's Recommendation and the FCC's Report and Order relative to affordability and use of a revenue benchmark. The analysis undertaken in this paper demonstrates that there is a critical need to consider not only the *cost* of serving individual geographic areas, but also the *income* of the areas in question. State and federal regulators are urged to adopt the following recommendation:

- State and federal regulators should establish the 70th percentile for median CBG income as a threshold criterion for high-cost support eligibility, using relative income level with respect to the statewide income distribution. However, regulators could use a combination of state-specific and national income rankings rather than either a state-specific or national distribution, in setting eligibility thresholds. For example, if there are high-cost areas within a state which are above the 70th percentile in income for that state, but below the *national* median income, state commissions may determine that continued subsidies are warranted for such areas.

- Consumers within designated high-cost, high-income areas with income below the state median income should qualify for universal service at the current subsidized rate. Of course, individual households in such areas that satisfy the eligibility requirements for current income-targeted support programs, such as Lifeline and Link-up, can still qualify for and receive these benefits.

- State commissions should establish appropriate transition plans to move rates in high-cost, high-income areas toward their full, forward-looking costs.

We recommend that the 1990 income levels (the most recent ones contained in the Census Bureau's data base) be indexed to the point of implementation, e.g., January 1, 1999, for the federal USF, using an inflation index such as the individual state and/or regional Consumer Price Indices (CPIs), since this probably comes closest to reflecting price level changes that confront individual households.[14] This refinement would be unlikely to materially alter the rankings within a state, but could change the rankings among states if some combination of state and national income distributions are utilized.

Conclusion

The results of this analysis demonstrate that the present versions of the cost proxy models do not yet adequately apply the criterion of affordability to the assessment of the need for high-cost support. It is neither appropriate nor necessary to provide high cost support to high-income areas in order to achieve the objective of universal service. By incorporating an examination of the median income of CBGs (or whatever geographic area selected) into the calculation of high cost support, regulators can ensure that public funds are directed specifically to those areas that require such support. The universal service support fund should not be used as a way to subsidize basic service for those where affordability is not an issue. This paper has described a specific mechanism that can be used in conjunction with a cost proxy model in order to design an economically efficient, fair universal service program.

14. See US Department of Labor, Bureau of Labor Statistics, CPI Detailed Report, various years.

Appendix A

USF SUPPORT FOR SELECTED HIGH COST, HIGH INCOME LEVELS

Sources: BCM2, 1990 Census of Population and Housing Summary Tape File 3A

State	Town	Monthly Cost	# HHs	$40 support	$30 support	$20 support	Income
AL	Auburn	$60.82	6	$1,499	$2,219	$2,939	$150,001
AL	Mtn. Brook	$39.87	165	$0	$19,543	$39,343	$127,292
AL	Pike Road	$46.78	63	$5,126	$12,686	$20,246	$112,072
AZ	Paradise Valley	$37.01	272	$0	$22,881	$55,521	$137,299
AZ	Phoenix (106), Paradise Valley (157)	$51.98	263	$37,809	$69,369	$100,929	$112,349
CA	Alamo	$62.93	147	$40,449	$58,089	$75,729	$134,883
CA	Alamo	$87.66	383	$219,045	$265,005	$310,965	$122,478
CA	Calabasas	$53.54	275	$44,682	$77,682	$110,682	$100,760
CA	Carmel	$56.34	351	$68,824	$110,944	$153,064	$101,854
CA	Coto de Caza	$43.62	363	$15,769	$59,329	$102,889	$100,765
CA	Diablo Range	$75.57	41	$17,500	$22,420	$27,340	$150,001
CA	Lafayette (11), Moraga (105), Central Contra Costa (30)	$57.56	146	$30,765	$48,285	$65,805	$117,064
CA	Laguna Beach (160), South Coast (548)	$44.41	708	$37,467	$122,427	$207,387	$109,601
CA	Los Altos	$42.75	208	$6,864	$31,824	$56,784	$123,670
CA	Los Angeles	$45.41	170	$11,036	$31,436	$51,836	$105,511
CA	Los Gatos	$45.06	201	$12,205	$36,325	$60,445	$107,582
CA	Los Gatos (176), San Jose (111)	$54.60	287	$50,282	$84,722	$119,162	$100,187
CA	Monterey	$41.35	17	$275	$2,315	$4,355	$150,001
CA	(15)	$53.20	243	$38,491	$67,651	$96,811	$113,421
CA	Saratoga (138), San Jose (61)	$51.58	199	$27,653	$51,533	$75,413	$111,557
CA	Simi Valley	$57.21	356	$73,521	$116,241	$158,961	$125,400
CA	Thousand Oaks	$76.74	130	$57,314	$72,914	$88,514	$100,472
CA	West Santa Clara	$80.12	27	$12,999	$16,239	$19,479	$138,093
CA	West Santa Clara	$84.43	54	$28,791	$35,271	$41,751	$113,283
CA	Woodside	$64.93	58	$17,351	$24,311	$31,271	$106,514
CO	Cherry Hills Village	$40.63	179	$1,353	$22,833	$44,313	$113,621
CO	South Aurora	$45.41	290	$18,827	$53,627	$88,427	$98,331
CO	Vail	$66.08	68	$21,281	$29,441	$37,601	$102,941
CT	Fairfield	$45.47	238	$15,622	$44,182	$72,742	$120,607
CT	Fairfield	$48.02	237	$22,809	$51,249	$79,689	$114,074
CT	Greenwich	$48.90	177	$18,904	$40,144	$61,384	$150,001
CT	Greenwich	$44.77	436	$24,957	$77,277	$129,597	$150,001
CT	Greenwich	$43.11	505	$18,847	$79,447	$140,047	$150,001
CT	Greenwich	$43.13	486	$18,254	$76,574	$134,894	$131,811
CT	Greenwich	$46.15	299	$22,066	$57,946	$93,826	$113,910
CT	New Canaan	$46.07	334	$24,329	$64,409	$104,489	$150,001
CT	New Canaan	$56.79	144	$29,013	$46,293	$63,573	$130,978
CT	New Canaan	$43.64	401	$17,516	$65,636	$113,756	$121,912
CT	New Canaan	$45.33	522	$33,387	$96,027	$158,667	$121,363
CT	New Canaan	$46.40	222	$17,050	$43,690	$70,330	$117,182
CT	New Canaan (469), Darien (10)	$43.51	479	$20,175	$77,655	$135,135	$111,408
CT	Weston	$59.13	107	$24,563	$37,403	$50,243	$142,866
CT	Wilton	$46.88	311	$25,676	$62,996	$100,316	$116,095
CT	Wilton	$43.10	307	$11,420	$48,260	$85,100	$109,343
CT	Wilton	$44.71	578	$32,669	$102,029	$171,389	$105,432
DC	Washington DC	$31.92	83	$0	$1,912	$11,872	$134,792
DC	Washington DC	$29.89	128	$0	$0	$15,191	$104,498

State	Town	Monthly Cost	# HHs	$40 support	$30 support	$20 support	Income
FL	Boca Grande	$43.00	58	$2,088	$9,048	$16,008	$131,981
FL	Indian Creek Village	$57.07	27	$5,531	$8,771	$12,011	$150,001
FL	Jupiter Island	$37.05	236	$0	$19,966	$48,286	$150,001
FL	Kendall-Perrine	$41.26	81	$1,225	$10,945	$20,665	$150,001
FL	Lake Wales	$57.02	98	$20,016	$31,776	$43,536	$134,408
FL	North Key Largo	$48.68	256	$26,665	$57,385	$88,105	$127,518
GA	Norcross	$47.01	51	$4,290	$10,410	$16,530	$139,375
GA	Roswell-Alpharetta	$38.78	221	$0	$23,285	$49,805	$150,001
GA	Sandy Springs	$42.33	173	$4,837	$25,597	$46,357	$150,001
GA	Sandy Springs	$34.90	33	$0	$1,940	$5,900	$150,001
GA	Sandy Springs	$38.03	145	$0	$13,972	$31,372	$132,960
GA	St. Simons	$56.58	194	$38,598	$61,878	$85,158	$150,001
HI	Honolulu	$33.51	1,076	$0	$45,321	$174,441	$111,017
IA	Bloomfield	$61.07	22	$5,562	$8,202	$10,842	$102,500
IA	Sioux City	$40.30	218	$785	$26,945	$53,105	$89,173
IL	Barrington Hills Village	$52.61	165	$24,968	$44,768	$64,568	$114,115
IL	Barrington Hills Village (9), Inverness Village (148)	$45.03	157	$9,477	$28,317	$47,157	$137,526
IL	Glencoe Village	$38.00	411	$0	$39,456	$88,776	$150,001
IL	Glencoe Village	$37.47	295	$0	$26,444	$61,844	$150,001
IL	Lake Forest	$32.10	245	$0	$6,174	$35,574	$150,001
IL	Lake Forest	$41.17	222	$3,117	$29,757	$56,397	$125,000
IL	Oak Brook Village	$35.13	151	$0	$9,296	$27,416	$150,001
IN	Carmel	$41.19	61	$871	$8,191	$15,511	$150,001
IN	Indianapolis	$39.40	162	$0	$18,274	$37,714	$102,611
IN	Indianapolis	$38.23	352	$0	$34,764	$77,004	$100,294
KS	Olathe	$51.49	106	$14,615	$27,335	$40,055	$103,263
KS	Overland Park (7), Oxford (48)	$54.53	55	$9,590	$16,190	$22,790	$130,125
KY	Glenview Hills	$31.17	400	$0	$5,616	$53,616	$108,877
LA	East Baton Rouge	$36.78	300	$0	$24,408	$60,408	$95,518
LA	New Orleans	$27.86	223	$0	$0	$21,033	$104,704
LA	New Orleans	$28.06	142	$0	$0	$13,734	$98,518
LA	Shreveport	$29.02	209	$0	$0	$22,622	$95,804
MA	Dover	$40.94	549	$6,193	$72,073	$137,953	$104,977
MA	Dover	$42.35	251	$7,078	$37,198	$67,318	$103,320
MA	Harvard	$47.63	389	$35,617	$82,297	$128,977	$100,415
MA	Lincoln	$40.42	367	$1,850	$45,890	$89,930	$108,561
MA	Southborough	$52.98	262	$40,809	$72,249	$103,689	$98,635
MA	Weston	$49.84	193	$22,789	$45,949	$69,109	$125,415
MD	Clarksville	$45.56	56	$3,736	$10,456	$17,176	$150,001
MD	Clarksville	$36.33	193	$0	$14,660	$37,820	$115,812
MD	N. Potomac	$38.22	276	$0	$27,225	$60,345	$150,001
MD	Potomac	$30.16	1,867	$0	$3,585	$227,625	$150,001
MD	Potomac	$33.77	440	$0	$19,906	$72,706	$143,588
MI	Bloomfield	$36.97	475	$0	$39,729	$96,729	$150,001
MI	Bloomfield	$46.53	108	$8,463	$21,423	$34,383	$150,001
MI	Grosse Point Shores Village	$40.74	294	$2,611	$37,891	$73,171	$136,369
MI	Grosse Pointe Farms	$42.97	139	$4,954	$21,634	$38,314	$150,001

USF pport for Selected High Cost, High Income CBGs

State	Town	Monthly Cost	# HHs	$40 support	$30 support	$20 support	Income
MN	North Oaks	$31.66	454	$0	$9,044	$63,524	$125,660
MN	Rochester	$47.68	152	$14,008	$32,248	$50,488	$123,572
MN	Rochester	$53.06	251	$39,337	$69,457	$99,577	$103,286
MO	Ladue	$37.63	180	$0	$16,481	$38,081	$117,296
MO	Riverside	$95.03	13	$8,585	$10,145	$11,705	$150,001
NC	Charlotte	$37.66	79	$0	$7,262	$16,742	$134,410
NC	Charlotte	$42.49	55	$1,643	$8,243	$14,843	$127,293
NE	McArdle	$37.70	119	$0	$10,996	$25,276	$150,001
NJ	Kinnelon	$63.21	204	$56,818	$81,298	$105,778	$127,885
NJ	Kinnelon	$70.50	498	$182,268	$242,028	$301,788	$111,006
NJ	Medford	$62.95	23	$6,334	$9,094	$11,854	$150,001
NJ	Mendham	$54.06	172	$29,020	$49,660	$70,300	$150,001
NJ	Rumson	$41.69	176	$3,569	$24,689	$45,809	$150,001
NM	Albuquerque	$29.56	458	$0	$0	$52,542	$106,240
NM	Albuquerque	$31.95	453	$0	$10,600	$64,960	$88,273
NM	Los Alamos	$78.69	529	$245,604	$309,084	$372,564	$81,282
NM	Sandia Hts. (81), Albuquerque (25)	$58.54	106	$23,583	$36,303	$49,023	$85,963
NV	Reno-Sparks	$39.63	175	$0	$20,223	$41,223	$94,342
NY	Bedford	$47.01	315	$26,498	$64,298	$102,098	$150,001
NY	Bedford	$51.11	389	$51,861	$98,541	$145,221	$120,487
NY	Mt. Pleasant	$57.75	193	$41,109	$64,269	$87,429	$108,732
NY	New Castle	$47.71	167	$15,451	$35,491	$55,531	$116,167
NY	New Castle	$58.71	66	$14,818	$22,738	$30,658	$109,563
NY	North Castle	$54.40	694	$119,923	$203,203	$286,483	$128,855
NY	Pound Ridge	$45.54	351	$23,334	$65,454	$107,574	$109,027
NY	Pound Ridge	$57.17	349	$71,908	$113,788	$155,668	$106,793
NY	Rye	$45.91	159	$11,276	$30,356	$49,436	$150,001
NY	Rye	$40.72	187	$1,616	$24,056	$46,496	$108,725
NY	Scarsdale	$40.61	241	$1,764	$30,684	$59,604	$119,342
OH	Bexley	$43.87	176	$8,173	$29,293	$50,413	$150,001
OH	Hunting Valley Village	$56.16	255	$49,450	$80,050	$110,650	$126,786
OH	Madison	$51.26	7	$946	$1,786	$2,626	$127,308
OH	Shaker Heights	$39.99	127	$0	$15,225	$30,465	$150,001
OH	The Village of Indian Hill	$41.98	162	$3,849	$23,289	$42,729	$150,001
OH	The Village of Indian Hill (589), Sycamore (213)	$38.29	802	$0	$79,783	$176,023	$148,752
OK	Edmond	$41.26	363	$5,489	$49,049	$92,609	$99,059
OK	Tulsa	$45.15	49	$3,028	$8,908	$14,788	$150,001
OK	Tulsa	$34.46	287	$0	$15,360	$49,800	$97,483
OR	Portland	$34.87	394	$0	$23,025	$70,305	$105,991
OR	Portland	$31.35	369	$0	$5,978	$50,258	$91,295
PA	Derry	$96.70	7	$4,763	$5,603	$6,443	$150,001
PA	Fox Chapel	$32.64	552	$0	$17,487	$83,727	$123,339
PA	McCandless	$38.96	170	$0	$18,278	$38,678	$137,012
PA	Pennsbury	$35.58	92	$0	$6,160	$17,200	$101,299
PA	Wycombe	$89.84	11	$6,579	$7,899	$9,219	$150,001

State	Town	Monthly Cost	# HHs	$40 support	$30 support	$20 support	Income
RI	Barrington	$32.23	370	$0	$9,901	$54,301	$90,023
RI	Providence	$35.37	220	$0	$14,177	$40,577	$97,138
RI	Providence	$37.30	373	$0	$32,675	$77,435	$96,432
RI	Providence	$33.10	200	$0	$7,440	$31,440	$96,432
SC	Hilton Head Island	$34.74	41	$0	$2,332	$7,252	$118,422
SC	Pontiac	$38.46	219	$0	$22,233	$48,513	$100,240
TN	Forest Hills (233), Oakhill (8)	$40.75	241	$2,169	$31,089	$60,009	$106,765
TN	Germantown	$31.07	461	$0	$5,919	$61,239	$94,998
TN	Germantown (843), Memphis (23)	$30.29	866	$0	$3,014	$106,934	$97,785
TN	Germantown (560), Memphis (23)	$33.77	583	$0	$26,375	$96,335	$87,389
TN	Nashville-Davidson (150), Forest Hills (116)	$37.79	266	$0	$24,866	$56,786	$123,582
TX	Corpus Christi	$40.85	98	$1,000	$12,760	$24,520	$126,113
TX	Dallas	$29.09	301	$0	$0	$32,833	$150,001
TX	Houston	$30.13	115	$0	$179	$13,979	$150,001
TX	Hunters Creek Village	$35.93	203	$0	$14,445	$38,805	$138,210
TX	San Antonio	$35.93	201	$0	$14,303	$38,423	$150,001
TX	San Antonio	$38.73	224	$0	$23,466	$50,346	$130,003
TX	Tyler	$35.02	17	$0	$1,024	$3,064	$150,001
UT	Cottonwood Hts. (267), Holladay (35)	$37.15	302	$0	$25,912	$62,152	$99,212
VA	Great Falls	$42.97	426	$15,183	$66,303	$117,423	$119,728
VA	McLean	$32.09	51	$0	$1,279	$7,399	$150,001
VA	McLean	$34.15	599	$0	$29,830	$101,710	$126,101
VA	McLean (88), Great Falls (457), Dranesville (73)	$34.76	618	$0	$35,300	$109,460	$121,209
VA	Springfield	$47.55	223	$20,204	$46,964	$73,724	$106,461
VA	Springfield	$41.98	83	$1,972	$11,932	$21,892	$105,138
WA	East Seattle (225), Bellevue (37), Eastgate (9)	$36.01	271	$0	$19,545	$52,065	$103,405
WA	Medina	$43.52	150	$6,336	$24,336	$42,336	$94,096
WA	Mercer Island	$40.58	111	$773	$14,093	$27,413	$89,540
WA	Seattle	$31.57	188	$0	$3,542	$26,102	$135,080
WA	Seattle	$32.29	302	$0	$8,299	$44,539	$110,746
WI	Bayside (35), Mequon (589)	$33.27	624	$0	$24,486	$99,366	$108,494
WI	River Hills	$26.18	567	$0	$0	$42,049	$110,712
WI	Whitefish Bay	$28.36	398	$0	$0	$39,927	$99,477
WY	Casper North	$213.95	2	$4,175	$4,415	$4,655	$102,264
WY	Douglas	$210.74	14	$28,684	$30,364	$32,044	$125,889
WY	Gillette South	$208.58	3	$6,069	$6,429	$6,789	$102,264
WY	Gillette South	$205.44	12	$23,823	$25,263	$26,703	$84,511
WY	Kaycee	$205.47	1	$1,986	$2,106	$2,226	$150,001
WY	Kaycee	$213.43	10	$20,812	$22,012	$23,212	$102,264

Sources: BCM2, 1990 Census of Population and Housing Summary Tape File 3A

Appendix B

METHODOLOGICAL APPROACH AND STATE-SPECIFIC ANALYSIS

APPENDIX B

Description of methodological approach

The BCM2 with the unadjusted default values was used to compute the cost of providing basic local exchange service in each of the nation's more than 200,000 census block groups (CBGs).[15] These cost results were compared with three different monthly revenue benchmarks — $20, $30 and $40 — in order to estimate the universal service funding (USF) requirement on a state-by-state basis (i.e., to generate the "default" results of the BCM2). This is the "baseline" case — i.e., the scenario whereby *all* households in high-cost areas would be eligible for subsidization, regardless of their income level.

Because the BCM2 does not include any of the income data from the Census data base for the CBGs whose proxy costs the Model undertakes to evaluate, this data was obtained from the Census Bureau and integrated with the BCM2 data base. Median household income was selected as an appropriate metric from the income data contained in the Census CBG data base.[16] The purpose of the analysis was to overlay CBG income and CBG cost. Three different possible income guidelines for determining high-cost eligibility were defined and analyzed:

1. Only those CBGs with incomes below the 50th percentile (i.e., below the median income level) for each state would be eligible for high-cost support.[17]

2. Only those CBGs with incomes below the 70th percentile for each state would be eligible for high-cost support (i.e., the highest 30% would be ineligible).

3. Only those CBGs with incomes below the 90th percentile for each state would be eligible for high-cost support (i.e., the highest 10% would be ineligible).

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15. Use of the BCM2 Model in no way implies endorsement of this model for determination of high-cost support funding. In fact, there is no reason to expect the pattern or overall magnitude of the results of this study to be substantially different if another cost proxy model is adopted. The BCM2 is designed in such a way as to a permit the modification of certain "user-specified" values. While the BCM2 default values were not revised for this analysis, their use does not in any sense constitute agreement with these values.

16. *1990 Census of Population and Housing Summary Tape File 3A.* These data provide the most recent income statistics available from the Census Bureau. Mean and median household incomes have risen in nominal terms from 1990 to 1995, (see Current Population Reports, Series P-60, Income Statistics Branch/HHES Division, U.S. Bureau of the Census) and therefore there is a temporal mismatch between the costs examined (which are based upon estimates made in 1997) and the incomes examined (which were reported in 1990). One would expect, therefore, that the "actual" average incomes are greater than those reported in 1990. This mismatch of years does not influence the results of our analysis because we examine the income stratification rather than the income level, but it may influence any judgments that regulators may make about the appropriate income guidelines for a high-cost fund.

17. Because the analysis relies upon a ranking of the CBGs, the 50th, 70th, and 90th percentiles do not include 50%, 70% and 90% of the households, but rather 50%, 70%, and 90% of the CBGs.

Appendix B

While the median household income for the US as a whole is $30,056, there is considerable variation in income levels from state to state. For example, Connecticut has the highest median household income ($41,721), while Mississippi has the lowest ($20,136). Since income levels tend to bear at least some relationship with the cost of living in a particular area (such as a state), the income distribution within each state was used to identify those CBGs falling below the three income thresholds (50th, 70th and 90th percentiles, respectively). For computational purposes, the 50%, 30%, and 10% of the CBGs, respectively, with the highest incomes, were identified to provide a reasonable approximation of comparing CBG incomes to the statewide income that corresponds with the 50th, 70th and 90th percentiles.

It should also be noted that all of the average income figures are biased downward because of the way the US Census Bureau treats incomes over $150,000. The Census Bureau places all those with incomes above $150,000 into the same bracket. Because of this grouping, a household with a $1-million income is given the same statistical weighting as one with a $150,000 income. Thus, very high incomes cannot be accurately captured in the analysis. Taking this fact into consideration would mean that many states and individual CBGs are even wealthier than they are represented to be by the Census data.[18] This fact does not, however, affect the results because the CBGs in this income bracket would be assigned to the top percentiles, regardless of the "correct" absolute median average. However, it is relevant to an assessment of affordability and to the design of fair income guidelines.

Table B-1 below summarizes state-specific data and results for the country.[19]

18. Furthermore, as noted previously, the incomes are those that were reported in 1990.

19. The median income for each state and the income cap for the 50th percentile do not match because the state median income is based upon a ranking of households, while the USF support analysis discussed in this paper relies upon a ranking of CBGs.

Appendix B

TABLE B-1
RESULTS OF STATE-SPECIFIC ANALYSIS

State	Total Support for 100% CBGs *	Total Support for Bottom 90%	% Difference (100%-90%)/100%	Total Support for Bottom 70%	% Difference (100%-70%)/100%	Total Support for Bottom 50%	% Difference (100%-50%)/100%
Alabama							
$40 benchmark	$108,269,744	$105,590,367	2.5%	$86,467,581	20.1%	$55,705,736	48.5%
$30 benchmark	$198,562,895	$189,287,545	4.7%	$149,404,052	24.8%	$94,459,607	52.4%
$20 benchmark	$348,469,876	$318,552,809	8.6%	$241,572,100	30.7%	$153,954,788	55.8%
HH Income	$23,597	$36,097		$26,012		$21,379	
Alaska							
$40 benchmark	$27,791,223	$25,869,293	6.9%	$21,833,781	21.4%	$16,628,316	40.2%
$30 benchmark	$38,993,835	$35,803,695	8.2%	$28,950,612	25.8%	$21,492,325	44.9%
$20 benchmark	$57,550,955	$51,976,327	9.7%	$40,559,980	29.5%	$29,093,549	49.4%
HH Income	$41,408	$60,000		$47,083		$39,583	
Arizona							
$40 benchmark	$86,565,140	$82,788,550	4.4%	$75,579,402	12.7%	$62,376,600	27.9%
$30 benchmark	$127,398,841	$119,146,275	6.5%	$104,423,144	18.0%	$82,583,791	35.2%
$20 benchmark	$243,042,550	$222,724,431	8.4%	$180,959,939	25.5%	$133,814,650	44.9%
HH Income	$27,540	$48,750		$33,906		$26,128	
Arkansas							
$40 benchmark	$113,799,749	$110,397,032	3.0%	$89,488,916	21.4%	$58,940,981	48.2%
$30 benchmark	$175,545,100	$167,472,363	4.6%	$132,497,319	24.5%	$86,416,728	50.8%
$20 benchmark	$265,795,537	$246,043,004	7.4%	$189,193,505	28.8%	$123,486,069	53.5%
HH Income	$21,147	$31,029		$23,382		$19,537	
California							
$40 benchmark	$142,588,890	$136,801,937	4.1%	$122,692,308	14.0%	$98,210,865	31.1%
$30 benchmark	$281,163,643	$255,705,981	9.1%	$210,424,512	25.2%	$160,533,831	42.9%
$20 benchmark	$882,564,449	$773,961,221	12.3%	$572,975,245	35.1%	$391,072,920	55.7%
HH Income	$35,798	$61,228		$43,750		$34,583	
Colorado							
$40 benchmark	$71,726,168	$67,880,706	5.4%	$56,328,819	21.5%	$38,850,830	45.8%
$30 benchmark	$111,565,611	$102,633,281	8.0%	$81,659,968	26.8%	$54,862,360	50.8%
$20 benchmark	$216,517,631	$194,598,740	10.1%	$146,649,650	32.3%	$95,899,015	55.7%
HH Income	$30,140	$50,000		$35,809		$27,122	
Connecticut							
$40 benchmark	$30,760,236	$27,843,412	9.5%	$18,705,975	39.2%	$8,850,541	71.2%
$30 benchmark	$69,893,084	$59,872,418	14.3%	$38,792,185	44.5%	$18,927,128	72.9%
$20 benchmark	$167,163,841	$145,671,694	12.9%	$100,569,127	39.8%	$56,741,090	66.1%
HH Income	$41,721	$66,401		$51,101		$42,344	
Delaware							
$40 benchmark	$5,477,012	$5,477,012	0.0%	$4,958,275	9.5%	$3,984,527	27.2%
$30 benchmark	$13,902,700	$13,640,268	1.9%	$12,011,939	13.6%	$9,120,332	34.4%
$20 benchmark	$34,971,797	$32,675,316	6.6%	$26,501,788	24.2%	$18,463,844	47.2%
HH Income	$34,875	$52,554		$39,175		$31,836	
DC							
$40 benchmark	$10,877	$10,877	0.0%	$10,877	0.0%	$10,877	0.0%
$30 benchmark	$336,514	$293,752	12.7%	$280,330	16.7%	$240,967	28.4%
$20 benchmark	$3,870,145	$3,323,887	14.1%	$2,939,981	24.0%	$2,227,164	42.5%
HH Income	$30,727	$65,794		$42,292		$31,312	
Florida							
$40 benchmark	$98,309,431	$92,542,043	5.9%	$78,051,672	20.6%	$54,026,338	45.0%
$30 benchmark	$238,882,332	$217,543,509	8.9%	$171,026,180	28.4%	$113,839,855	52.3%
$20 benchmark	$691,549,942	$616,389,900	10.9%	$450,140,339	34.9%	$286,882,492	58.5%
HH Income	$27,483	$43,618		$31,358		$25,476	
Georgia							
$40 benchmark	$118,725,982	$117,305,812	1.2%	$106,123,974	10.6%	$73,946,865	37.7%
$30 benchmark	$225,229,959	$217,972,887	3.2%	$185,614,824	17.6%	$124,100,682	44.9%
$20 benchmark	$442,093,403	$410,614,143	7.1%	$321,234,143	27.3%	$208,386,285	52.9%
HH Income	$29,021	$48,487		$32,250		$25,478	

State	Total Support for 100% CBGs *	Total Support for Bottom 90%	% Difference (100%-90%)/100%	Total Support for Bottom 70%	% Difference (100%-70%)/100%	Total Support for Bottom 50%	% Difference (100%-50%)/100%
Hawaii							
$40 benchmark	$12,303,412	$12,044,175	2.1%	$11,279,216	8.3%	$8,938,137	27.4%
$30 benchmark	$22,693,811	$21,674,565	4.5%	$19,141,719	15.7%	$14,150,848	37.6%
$20 benchmark	$51,291,616	$46,317,775	9.7%	$36,303,998	29.2%	$25,554,663	50.2%
HH Income	$38,829	$60,782		$45,764		$38,082	
Idaho							
$40 benchmark	$49,047,890	$47,092,159	4.0%	$37,759,597	23.0%	$24,793,610	49.5%
$30 benchmark	$67,793,723	$64,023,742	5.6%	$50,832,427	25.0%	$32,684,459	51.8%
$20 benchmark	$101,014,177	$92,642,161	8.3%	$72,034,928	28.7%	$46,434,617	54.0%
HH Income	$25,257	$37,396		$28,125		$23,958	
Illinois							
$40 benchmark	$122,421,435	$120,752,361	1.4%	$108,863,692	11.1%	$80,601,001	34.2%
$30 benchmark	$228,954,576	$218,107,954	4.7%	$184,877,996	19.3%	$132,668,659	42.1%
$20 benchmark	$528,026,002	$481,598,695	8.8%	$373,940,439	29.2%	$255,952,129	51.5%
HH Income	$32,252	$53,587		$38,281		$30,637	
Indiana							
$40 benchmark	$94,865,121	$88,287,710	6.9%	$60,392,160	36.3%	$33,228,419	65.0%
$30 benchmark	$185,030,110	$167,684,194	9.4%	$113,477,704	38.7%	$63,075,851	65.9%
$20 benchmark	$368,748,293	$324,580,367	12.0%	$224,537,993	39.1%	$134,375,945	63.6%
HH Income	$28,797	$41,930		$32,292		$27,361	
Iowa							
$40 benchmark	$97,944,063	$94,474,730	3.5%	$75,531,382	22.9%	$49,267,813	49.7%
$30 benchmark	$155,771,649	$148,030,861	5.0%	$117,272,897	24.7%	$77,806,742	50.1%
$20 benchmark	$253,959,119	$235,101,678	7.4%	$183,269,997	27.8%	$122,342,739	51.8%
HH Income	$26,229	$37,714		$29,219		$25,323	
Kansas							
$40 benchmark	$93,776,223	$90,772,029	3.2%	$70,628,391	24.7%	$48,092,739	48.7%
$30 benchmark	$135,528,850	$128,677,550	5.1%	$98,567,995	27.3%	$67,064,787	50.5%
$20 benchmark	$216,661,281	$198,241,586	8.5%	$147,434,214	32.0%	$98,838,408	54.4%
HH Income	$27,291	$41,250		$30,000		$24,464	
Kentucky							
$40 benchmark	$109,247,643	$106,611,840	2.4%	$92,220,015	15.6%	$69,535,849	36.4%
$30 benchmark	$192,062,787	$184,056,167	4.2%	$154,652,791	19.5%	$114,143,418	40.6%
$20 benchmark	$323,873,103	$300,196,917	7.3%	$242,804,703	25.0%	$173,890,367	46.3%
HH Income	$22,534	$36,450		$26,389		$20,833	
Louisiana							
$40 benchmark	$86,405,060	$84,690,032	2.0%	$72,727,842	15.8%	$46,076,718	46.7%
$30 benchmark	$159,803,823	$152,243,100	4.7%	$124,499,182	22.1%	$78,523,856	50.9%
$20 benchmark	$302,844,210	$277,542,910	8.4%	$215,351,240	28.9%	$136,545,887	54.9%
HH Income	$21,949	$37,446		$25,921		$20,096	
Maine							
$40 benchmark	$83,273,866	$77,194,773	7.3%	$61,719,817	25.9%	$44,868,022	46.1%
$30 benchmark	$119,192,822	$109,259,535	8.3%	$85,728,367	28.1%	$61,217,844	48.6%
$20 benchmark	$166,243,367	$151,443,273	8.9%	$117,017,157	29.6%	$82,116,465	50.6%
HH Income	$27,854	$39,792		$31,469		$27,326	
Maryland							
$40 benchmark	$23,251,531	$22,860,473	1.7%	$20,170,042	13.3%	$15,472,344	33.5%
$30 benchmark	$57,229,901	$54,237,214	5.2%	$43,186,090	24.5%	$29,818,286	47.9%
$20 benchmark	$169,320,456	$153,060,258	9.6%	$112,731,589	33.4%	$70,965,284	58.1%
HH Income	$39,386	$63,996		$46,707		$37,011	
Massachusetts							
$40 benchmark	$34,183,623	$30,856,083	9.7%	$22,452,411	34.3%	$11,836,661	65.4%
$30 benchmark	$86,074,470	$73,962,539	14.1%	$49,844,675	42.1%	$25,230,814	70.7%
$20 benchmark	$232,987,722	$201,169,303	13.7%	$137,191,577	41.1%	$76,622,603	67.1%
HH Income	$36,952	$58,260		$44,432		$36,875	
Michigan							
$40 benchmark	$133,039,135	$130,056,277	2.2%	$109,899,910	17.4%	$81,984,025	38.4%
$30 benchmark	$273,337,536	$258,945,146	5.3%	$206,520,741	24.4%	$144,040,985	47.3%
$20 benchmark	$586,650,242	$536,640,856	8.5%	$410,807,372	30.0%	$274,800,265	53.2%
HH Income	$31,020	$50,138		$36,607		$29,265	

A ysis of High Cost Support at Selected Income Levels

State	Total Support for 100% CBGs *	Total Support for Bottom 90%	% Difference (100%-90%)/100%	Total Support for Bottom 70%	% Difference (100%-70%)/100%	Total Support for Bottom 50%	% Difference (100%-50%)/100%
Minnesota							
$40 benchmark	$125,519,746	$124,006,166	1.2%	$114,743,408	8.6%	$87,825,843	30.0%
$30 benchmark	$192,788,716	$187,646,156	2.7%	$166,474,499	13.6%	$124,241,450	35.6%
$20 benchmark	$329,231,659	$308,291,331	6.4%	$253,399,823	23.0%	$182,516,926	44.6%
HH Income	$30,909	$48,750		$35,282		$28,036	
Mississippi							
$40 benchmark	$92,713,783	$89,987,899	2.9%	$75,324,097	18.8%	$51,932,598	44.0%
$30 benchmark	$157,912,848	$149,651,058	5.2%	$121,885,589	22.8%	$82,448,821	47.8%
$20 benchmark	$253,971,695	$234,493,387	7.7%	$186,111,878	26.7%	$126,135,225	50.3%
HH Income	$20,136	$33,125		$23,194		$18,920	
Missouri							
$40 benchmark	$175,081,457	$172,514,535	1.5%	$151,478,675	13.5%	$108,563,900	38.0%
$30 benchmark	$256,866,861	$249,315,074	2.9%	$212,068,172	17.4%	$149,705,764	41.7%
$20 benchmark	$423,818,132	$391,240,470	7.7%	$312,841,063	26.2%	$216,068,718	49.0%
HH Income	$26,362	$41,027		$29,228		$22,679	
Montana							
$40 benchmark	$55,338,185	$50,958,921	7.9%	$39,833,923	28.0%	$27,335,944	50.6%
$30 benchmark	$72,177,350	$66,169,948	8.3%	$50,898,687	29.5%	$34,222,707	52.6%
$20 benchmark	$99,429,580	$90,163,247	9.3%	$68,333,776	31.3%	$45,188,978	54.6%
HH Income	$22,988	$35,000		$26,750		$22,135	
Nebraska							
$40 benchmark	$71,445,601	$70,249,030	1.7%	$57,910,010	18.9%	$41,198,819	42.3%
$30 benchmark	$99,355,252	$96,409,092	3.0%	$78,488,365	21.0%	$55,727,021	43.9%
$20 benchmark	$149,255,436	$139,449,430	6.6%	$110,340,276	26.1%	$77,076,289	48.4%
HH Income	$26,016	$39,769		$28,438		$23,750	
Nevada							
$40 benchmark	$34,196,875	$32,222,047	5.8%	$26,893,125	21.4%	$19,538,804	42.9%
$30 benchmark	$47,574,874	$44,157,121	7.2%	$35,088,855	26.2%	$24,637,007	48.2%
$20 benchmark	$83,727,699	$77,672,376	7.2%	$59,151,907	29.4%	$39,822,845	52.4%
HH Income	$31,011	$50,498		$38,659		$31,023	
New Hampshire							
$40 benchmark	$38,727,493	$36,156,715	6.6%	$28,218,719	27.1%	$16,636,050	57.0%
$30 benchmark	$65,434,007	$59,411,365	9.2%	$44,744,226	31.6%	$28,860,215	55.9%
$20 benchmark	$106,138,535	$94,723,041	10.8%	$70,122,850	33.9%	$44,863,394	57.7%
HH Income	$36,329	$52,177		$40,417		$34,375	
New Jersey							
$40 benchmark	$17,362,688	$16,223,341	6.6%	$10,976,443	36.8%	$5,777,982	66.7%
$30 benchmark	$60,829,712	$54,673,352	10.1%	$36,642,883	39.8%	$20,061,778	67.0%
$20 benchmark	$233,915,933	$206,902,505	11.5%	$143,244,506	38.8%	$86,513,583	63.0%
HH Income	$40,927	$68,043		$50,305		$40,363	
New Mexico							
$40 benchmark	$65,674,198	$63,073,967	4.0%	$53,661,471	18.3%	$41,586,961	36.7%
$30 benchmark	$88,829,008	$84,080,997	5.3%	$69,902,719	21.3%	$52,731,102	40.6%
$20 benchmark	$135,968,308	$125,241,825	7.9%	$100,139,007	26.4%	$71,898,392	47.1%
HH Income	$24,087	$39,896		$27,321		$21,463	
New York							
$40 benchmark	$166,623,794	$163,102,380	2.1%	$151,936,672	8.8%	$115,217,851	30.9%
$30 benchmark	$307,167,667	$292,269,169	4.9%	$255,691,016	16.8%	$181,425,594	40.9%
$20 benchmark	$659,610,412	$601,666,244	8.8%	$474,148,364	28.1%	$316,300,649	52.0%
HH Income	$32,965	$58,827		$42,000		$32,292	
North Carolina							
$40 benchmark	$142,022,304	$139,812,182	1.6%	$117,842,042	17.0%	$84,514,709	40.5%
$30 benchmark	$282,980,936	$271,445,356	4.1%	$216,274,808	23.6%	$148,799,552	47.4%
$20 benchmark	$529,685,378	$488,467,059	7.8%	$372,759,555	29.6%	$251,830,093	52.5%
HH Income	$26,647	$40,257		$29,850		$25,062	

State	Total Support for 100% CBGs *	Total Support for Bottom 90%	% Difference (100%-90%)/100%	Total Support for Bottom 70%	% Difference (100%-70%)/100%	Total Support for Bottom 50%	% Difference (100%-50%)/100%
North Dakota							
$40 benchmark	$57,124,436	$52,749,783	7.7%	$40,702,308	28.7%	$29,267,941	48.8%
$30 benchmark	$70,790,328	$64,832,043	8.4%	$50,405,243	28.8%	$36,173,375	48.9%
$20 benchmark	$92,077,432	$83,042,027	9.8%	$64,617,956	29.8%	$45,852,234	50.2%
HH Income	$23,213	$33,534		$25,625		$21,591	
Ohio							
$40 benchmark	$128,393,296	$124,464,191	3.1%	$90,993,485	29.1%	$47,255,869	63.2%
$30 benchmark	$272,185,011	$254,910,124	6.3%	$182,806,970	32.8%	$97,643,260	64.1%
$20 benchmark	$614,504,598	$551,939,009	10.2%	$393,651,819	35.9%	$227,060,678	63.0%
HH Income	$28,706	$43,854		$33,113		$27,188	
Oklahoma							
$40 benchmark	$100,984,247	$97,175,241	3.8%	$77,387,369	23.4%	$52,178,889	48.3%
$30 benchmark	$158,856,469	$150,239,913	5.4%	$117,406,471	26.1%	$78,970,826	50.3%
$20 benchmark	$267,259,957	$244,439,341	8.5%	$184,563,748	30.9%	$123,368,880	53.8%
HH Income	$23,577	$37,917		$26,818		$21,333	
Oregon							
$40 benchmark	$77,502,634	$74,468,504	3.9%	$60,656,911	21.7%	$42,022,874	45.8%
$30 benchmark	$119,637,078	$112,071,803	6.3%	$87,342,513	27.0%	$59,088,440	50.6%
$20 benchmark	$216,925,875	$196,290,456	9.5%	$146,591,534	32.4%	$97,633,205	55.0%
HH Income	$27,250	$40,369		$30,683		$25,500	
Pennsylvania							
$40 benchmark	$163,593,183	$161,735,506	1.1%	$140,441,627	14.2%	$99,357,855	39.3%
$30 benchmark	$301,994,936	$291,026,075	3.6%	$236,166,621	21.8%	$158,661,874	47.5%
$20 benchmark	$612,775,392	$557,932,048	8.9%	$421,795,962	31.2%	$275,782,389	55.0%
HH Income	$29,069	$44,556		$32,857		$26,908	
Rhode Island							
$40 benchmark	$6,773,314	$5,709,094	15.7%	$2,704,906	60.1%	$408,418	94.0%
$30 benchmark	$15,697,779	$12,913,667	17.7%	$6,365,144	59.5%	$1,789,650	88.6%
$20 benchmark	$43,928,435	$37,439,372	14.8%	$22,651,037	48.4%	$11,111,673	74.7%
HH Income	$32,181	$46,937		$38,047		$32,344	
S. Carolina							
$40 benchmark	$81,374,752	$79,859,400	1.9%	$69,773,460	14.3%	$49,453,270	39.2%
$30 benchmark	$152,970,263	$146,702,315	4.1%	$121,373,606	20.7%	$82,873,632	45.8%
$20 benchmark	$279,168,065	$259,309,606	7.1%	$203,200,964	27.2%	$135,637,576	51.4%
HH Income	$26,256	$40,921		$30,066		$24,659	
S. Dakota							
$40 benchmark	$52,449,770	$49,080,400	6.4%	$38,474,592	26.6%	$27,093,580	48.3%
$30 benchmark	$69,560,205	$64,696,508	7.0%	$50,385,200	27.6%	$35,540,457	48.9%
$20 benchmark	$93,631,437	$85,567,574	8.6%	$65,437,376	30.1%	$46,205,582	50.7%
HH Income	$22,503	$32,009		$24,406		$21,028	
Tennessee							
$40 benchmark	$113,374,821	$110,026,017	3.0%	$93,680,417	17.4%	$63,225,035	44.2%
$30 benchmark	$214,160,251	$202,523,389	5.4%	$163,984,815	23.4%	$108,537,054	49.3%
$20 benchmark	$391,293,772	$358,799,780	8.3%	$277,007,527	29.2%	$181,929,528	53.5%
HH Income	$24,807	$39,861		$28,125		$22,708	
Texas							
$40 benchmark	$272,533,671	$269,453,788	1.1%	$235,680,718	13.5%	$157,627,714	42.2%
$30 benchmark	$464,134,553	$447,839,704	3.5%	$372,965,280	19.6%	$245,034,783	47.2%
$20 benchmark	$965,509,384	$891,069,787	7.7%	$691,340,558	28.4%	$450,580,486	53.3%
HH Income	$27,016	$48,214		$31,827		$24,333	
Utah							
$40 benchmark	$32,825,938	$31,423,462	4.3%	$26,966,791	17.8%	$21,222,410	35.3%
$30 benchmark	$47,672,399	$44,711,790	6.2%	$36,641,951	23.1%	$27,476,772	42.4%
$20 benchmark	$90,499,294	$82,189,321	9.2%	$63,636,313	29.7%	$44,327,961	51.0%
HH Income	$29,470	$44,312		$34,412		$28,150	

State	Total Support for 100% CBGs *	Total Support for Bottom 90%	% Difference (100%-90%)/100%	Total Support for Bottom 70%	% Difference (100%-70%)/100%	Total Support for Bottom 50%	% Difference (100%-50%)/100%
Vermont							
$40 benchmark	$35,858,893	$32,685,777	8.8%	$24,752,762	31.0%	$16,816,312	53.1%
$30 benchmark	$51,951,872	$46,883,995	9.8%	$34,940,866	32.7%	$23,580,297	54.6%
$20 benchmark	$72,293,239	$64,524,458	10.7%	$47,692,436	34.0%	$32,286,176	55.3%
HH Income	$29,792	$40,625		$32,436		$28,687	
Virginia							
$40 benchmark	$99,618,917	$98,929,941	0.7%	$88,177,839	11.5%	$66,910,433	32.8%
$30 benchmark	$188,054,501	$183,948,384	2.2%	$157,874,688	16.0%	$115,073,395	38.8%
$20 benchmark	$377,184,292	$352,557,139	6.5%	$280,475,018	25.6%	$194,133,913	48.5%
HH Income	$33,328	$57,273		$37,467		$28,250	
Washington							
$40 benchmark	$76,625,619	$75,376,447	1.6%	$67,485,025	11.9%	$52,213,427	31.9%
$30 benchmark	$131,124,036	$125,492,230	4.3%	$106,923,569	18.5%	$77,505,072	40.9%
$20 benchmark	$279,458,573	$255,546,319	8.6%	$201,634,397	27.8%	$137,178,995	50.9%
HH Income	$31,183	$47,574		$36,719		$30,515	
W. Virginia							
$40 benchmark	$96,501,878	$93,716,019	2.9%	$80,700,189	16.4%	$60,928,788	36.9%
$30 benchmark	$145,860,346	$139,234,319	4.5%	$116,636,074	20.0%	$86,007,793	41.0%
$20 benchmark	$214,204,712	$200,089,520	6.6%	$163,064,767	23.9%	$117,928,734	44.9%
HH Income	$20,795	$31,354		$23,750		$19,907	
Wisconsin							
$40 benchmark	$107,453,939	$104,539,244	2.7%	$89,461,090	16.7%	$67,391,924	37.3%
$30 benchmark	$187,460,245	$176,408,539	5.9%	$142,686,775	23.9%	$102,579,273	45.3%
$20 benchmark	$343,209,336	$312,836,320	8.8%	$240,846,022	29.8%	$166,029,408	51.6%
HH Income	$29,442	$43,375		$33,250		$28,113	
Wyoming							
$40 benchmark	$27,183,736	$24,692,380	9.2%	$17,248,586	36.5%	$11,553,327	57.5%
$30 benchmark	$35,529,658	$32,099,703	9.7%	$21,908,201	38.3%	$14,497,327	59.2%
$20 benchmark	$50,296,544	$45,096,994	10.3%	$30,377,360	39.6%	$19,642,193	60.9%
HH Income	$27,096	$41,442		$30,441		$24,635	
Entire US:							
$40 benchmark	$4,258,662,622	$4,122,692,060	3.2%	$3,477,992,715	18.3%	$2,451,285,341	42.4%
$30 benchmark	$7,424,505,733	$7,012,037,730	5.6%	$5,658,661,455	23.8%	$3,860,898,446	48.0%
$20 benchmark	$14,664,182,818	$13,352,047,237	8.9%	$10,195,898,803	30.5%	$6,763,365,941	53.9%
*Note: Household income at the 100% level is the median income for that state.							
At the 90%, 70%, and 50% levels, the household income is the highest income in that bracket.							
Sources: BCM2, 1990 Census of Population and Housing Summary Tape File 3A							