

# **Broadband and Universal Service**

**DAVID J. GABEL  
QUEENS COLLEGE**

**AND**

**INTERNET AND TELECOMMUNICATIONS  
CONVERGENCE CONSORTIUM  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY**

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# Section 254(b) Principles

1. The provision of high quality service;
2. Reasonable and affordable prices for consumers;
3. Access to advanced services in all regions of the nation;
4. Consumers in rural and high cost areas have access to all telecommunications services that are provided in urban areas at reasonably comparable rates;
5. Providers of telecommunications services make equitable and nondiscriminatory contributions to the preservation and advancement of universal service;
6. Specific, predictable, and sufficient federal and state mechanisms to preserve and advance universal service; and
7. Universal service support mechanisms and rules that are competitively neutral.

# Types of Universal Service Funds

1. Low-income support: In 1984, the Commission established a Lifeline program to promote universal service by providing low-income individuals with discounts on the monthly cost of telephone service. Since then, the Commission has expanded the rules to help low-income households pay the initial costs of commencing service, and expand the federal default eligibility criteria to include an income-based criterion and additional means-tested programs.
2. High-cost support: “The high-cost support mechanisms enable areas with very high costs to recover some of these costs from the federal universal service support mechanisms, leaving a smaller remainder of the costs to be recovered through end-user rates or state universal service support mechanisms. In this manner, the high-cost support mechanisms are intended to hold down rates and thereby further one of the most important goals of federal and state regulation the preservation and advancement of universal telephone service.”
3. Schools and libraries support: “Eligible schools, school districts, and libraries, may receive discounts of 20-90% for eligible telecommunications services, voicemail, Internet access, and internal connections under the schools and libraries universal service support mechanism.”
4. Rural health care support: The 1996 Act requires telecommunications carriers to provide telecommunications services to public or non-profit health care providers at rates comparable to those charged for similar services. The Commission's universal service rules also permit eligible health care providers to receive support for any telecommunications service.

# States' Federal Filing Requirements

“...states should be required to file annual certifications with the Commission to ensure that carriers use universal service support “only for the provision, maintenance and upgrading of facilities and services for which the support is intended” consistent with section 254(e).”

# FCC Suggestions as to How Universal Service Funds Could be Used by States

“...a state could adjust intrastate rates, or otherwise direct carriers to use the federal support to replace implicit intrastate universal service support to high-cost rural areas, which was formerly generated by above-cost rates in low-cost urban areas, that has been eroded through competition. A state could also require carriers to use the federal support to upgrade facilities in rural areas to ensure that services provided in those areas are reasonably comparable to services provided in urban areas of the state. These examples are intended to be illustrative, not exhaustive. As long as the uses prescribed by the state are consistent with section 254(e), we believe that the states should have the flexibility to decide how carriers use support provided by the federal mechanism.”

## Descriptive Statistics and Definitions of Variable

Variable	Definition	Obs	Mean	Std. Dev.	Min	Max
total_qual~s	DSL qualified loops in wire center	2343	11,378	16,305	85	146,490
xdsl		2343	0.85	0.36	0	1
total_acce~s	Total access loops in wire center	2343	14,657	18,645	124	147,796
msa	1 wire in metropolitan statistical area (MSA); otherwise 0	2343	0.66	0.47	0	1
density	Population / wire center service area	2343	2,382	8,331	1.12	118,022
medhhinc	Medium household income	2343	48,221	18,930	14,423	157,679
medhval	Medium housing value	2343	135,537	85,454	0	737,206
persons_in~l	Persons in rural area	2262	3,907	4,223	0	38,962
wc_templ	Number of employees of firms or government agencies located in the wire center	2343	9,650	16,919	0	288,502
ratio_of_l~t	Ratio of UNE loop price to embedded cost of loop	2341	.8230034	.1518646	.589839	1.371827
monthly_to~s	Embedded cost of loop	2341	18.2845	3.019996	7.88	25.24
total_quar~m	Universal service quarterly payment	2343	3508.746	14802.63	0	167312.3
ror	1 if rate-of-return regulation; 0 otherwise	2343	.0495092	.2169749	0	1

## Correlation of Variables

Variable	total_qual~s	Xdsl	total_acc~s	msa	density	medhhinc	medhval	persons_in~l	Wc_templ	ratio_of_l~t	total_quar~m	ror
total_qual~s	1											
xdsl	0.28	1										
total_acc~s	0.98	0.30	1									
msa	0.39	0.37	0.39	1								
density	0.66	0.12	0.62	0.19	1							
medhhinc	0.18	0.22	0.21	0.45	-0.01	1						
medhval	0.26	0.23	0.27	0.34	0.09	0.84	1					
persons_in~l	-0.21	0.11	-0.15	-0.07	-0.22	-0.07	-0.13	1				
wc_templ	0.80	0.23	0.81	0.32	0.45	0.21	0.22	-0.15	1			
ratio_of_l~t	-0.12	0.10	-0.13	-0.04	-0.07	-0.03	0.09	0.02	-0.07	1		
total_quar~m	-0.15	-0.24	-0.15	-0.27	-0.07	-0.22	-0.18	0.05	-0.12	0.10	1	
ror	-0.11	-0.02	-0.11	-0.18	-0.06	-0.01	-0.04	0.01	-0.07	0.06	-0.05	1

# Qualified Line – Coefficient Estimates

Source	SS	df	MS	Number of obs = 2262		
Model	8.2964e+11	24	3.4568e+10	F( 24, 2238)	=	7741.81
Residual	9.9930e+09	2238	4465148.26	Prob > F	=	0.0000
Total	8.3963e+11	2262	371190304	R-squared	=	0.9881
				Adj R-squared	=	0.9880
				Root MSE	=	2113.1

  

total_qual~s	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
total_acce~s	.7626175	.0607974	12.54	0.000	.6433923	.8818427
msa	259.4512	119.206	2.18	0.030	25.68527	493.2172
density	.1737985	.0082196	21.14	0.000	.1576797	.1899174
medhhinc	-.031619	.0049449	-6.39	0.000	-.041316	-.021922
medhval	.0038405	.0010792	3.56	0.000	.0017241	.0059568
persons_in~l	-.1995926	.0112056	-17.81	0.000	-.2215671	-.177618
wc_templ	.036999	.0050369	7.35	0.000	.0271215	.0468765
ratio_of_l~t	1059.988	292.9244	3.62	0.000	485.5557	1634.42
monthly_to~s	-.6503927	12.82802	-0.05	0.960	-25.80645	24.50567
total_quar~m	-.0035671	.0033545	-1.06	0.288	-.0101454	.0030111
ror	275.2768	254.1821	1.08	0.279	-223.1804	773.7341



# Elasticity Estimates for Qualified Lines

Elasticities after regress  
 y = Fitted values (predict)  
 = 11060.977

variable	ey/ex	Std. Err.	z	P> z	[ 95% C.I. ]	X
total_a~	.9847826	.07861	12.53	0.000	.830714 1.13885	14283.3
msa	.0154717	.00711	2.18	0.030	.001539 .029404	.659593
density	.036078	.00171	21.07	0.000	.032723 .039433	2296.09
medhhinc	-.13753	.02152	-6.39	0.000	-.179709 -.095351	48110.8
medhval	.0468847	.01318	3.56	0.000	.021059 .072711	135034
person~l	-.0705012	.00397	-17.76	0.000	-.078282 -.062721	3907.02
wc_templ	.0309682	.00422	7.34	0.000	.022701 .039235	9258.06
ratio_~t	.0789448	.0218	3.62	0.000	.036226 .121663	.823789
monthl~s	-.0010749	.0212	-0.05	0.960	-.042627 .040478	18.2799
total~em	-.0011623	.00109	-1.06	0.288	-.003304 .00098	3604.02
ror	.0012213	.00113	1.08	0.279	-.000989 .003432	.049072

# USF Findings

- Data analysis indicates that USF money is not being used to upgrade the facilities.
- Results do not change if I use HCPM loop cost estimates.
- What does work? Evaluation of packet-switching.

# Variables Used in Regression Analysis

Variables	Mean	Standard Deviation	Predicted Sign of Coefficient <sup>a</sup>
Packet Switching 2001	0.282 (B) <sup>b</sup>	0.450	
ln(competition)	-18.1	7.09	+
Federal Price Cap	0.719 (B)	0.449 (B)	-
RUS Support	0.173 (B)	0.378 (B)	+
271 Approval	0.0838 (B)	0.277 (B)	+
UNE price/ Embedded Loop Cost	0.787	0.180	+
% WC Territory Classified as Rural	0.716 (B)	0.388 (B)	-
# of Employees	4848	10,575	+
# Small Establishments in SIC 52	16.2	40.80	+
# Medium Establishments in SIC	1.58	5.95	+
# Large Establishments in SIC 52	1.25	8.08	+
# Small Establishments in SIC 54	27.7	76.65	+
# Medium Establishments in SIC	1.74	7.00	+
# Large Establishments in SIC 54	0.389	2.28	+
Bellsouth	0.0825 (B)	0.275 (B)	+
Verizon	0.253 (B)	0.435 (B)	+
Qwest	0.0628 (B)	0.243 (B)	+
SBC	0.156 (B)	0.363 (B)	+
Alltel	0.0324 (B)	0.177 (B)	+
Sprint	0.0686 (B)	0.253 (B)	+
Century	0.0366 (B)	0.188 (B)	+
Cinncell	0.00271 (B)	0.0520 (B)	+
Citizens	0.0415 (B)	0.199 (B)	+
TDS	0.0134 (B)	0.115 (B)	+
Valor	0.0129 (B)	0.113 (B)	+



# Elasticity Estimates

Variables	All ILECs	Medium Size ILECs & RBOCs	RBOCs
ln(competition)	0.03280	0.03180*	0.0392
271 Approval	0.07430	0.0851	0.0976
RUS Support	0.02790	0.00511*	
%WC as Rural	-0.40300	-0.343	-0.239
UNE\$/LoopCos	0.47600	0.726	0.919
#of Employee	0.13500	0.153	0.158
Fed Price Ca	-0.30600	-0.324	
#SmallEstlnSIC52	0.05810	0.0586	0.0487
#Med.Est.InSIC52	-0.04390	-0.0454	-0.0412
#LargeEstlnSIC52	0.02140	0.0228	0.0255
#SmallEstlnSIC54	0.06070	0.0685	0.0724
#Med.Est.InSIC54	-0.03850	-0.0449	-0.0493
#LargeEstlnSIC54	-0.02240	-0.0252	-0.0282
Bellsouth	0.04880	-0.0211	-0.0241
Verizon	0.20800		
Qwest	0.13600	0.0925	0.102
SBC	-0.04670	-0.198	-0.222
Alltel	-0.01710	-0.048	
Sprint	0.01940	-0.0395	
Century	0.05900	0.0353	
Cinncell	-0.00158	-0.00417	
Citizens	-0.00066*	-0.0422	
TDS	-0.00803	-0.0211	
Valor	0.00477	-0.00588	