

Table 2

# CMRS Market Concentration in Major Urban Areas

Includes Cellular, PCS, 800 MHz (less public safety), 900 MHz SMR, 220 MHz, and 700 MHz Guard Band spectrum.

Region <sup>1</sup>	AT&T <sup>2</sup>	Cingular	Metro PCS	Sprint	Verizon	Voice Stream	Other PCS <sup>3</sup>	Motorola <sup>4</sup>	Southern Linc <sup>5</sup>	Nextel <sup>6</sup>	220 MHz <sup>7</sup>	Other 700 MHz <sup>8</sup>	Other 800 MHz <sup>9</sup>	Other 900 MHz <sup>10</sup>	Total CMRS Spectrum	Total Pre-Transfer HHI	Total Post-Transfer HHI	Δ HHI
<b>New York</b>																		
Total Spectrum (MHz)	45.00	10.00	0.00	30.00	45.00	30.00	10.00	1.00	0.00	19.90	1.55	4.00	10.35	2.25	209.1			
As % of Total Spectrum	22%	5%	0%	14%	22%	14%	5%	0%	0%	10%	1%	2%	5%	1%		1,482	1,491	9
<b>Los Angeles</b>																		
Total Spectrum (MHz)	45.00	30.00	0.00	30.00	45.00	20.00	0.00	0.50	0.00	21.85	1.55	4.00	9.15	2.00	209.1			
As % of Total Spectrum	22%	14%	0%	14%	22%	10%	0%	0%	0%	10%	1%	2%	4%	1%		1,545	1,550	5
<b>Chicago</b>																		
Total Spectrum (MHz)	30.00	25.00	0.00	20.00	65.00	30.00	0.00	0.25	0.00	20.70	1.55	4.00	9.80	2.75	209.1			
As % of Total Spectrum	14%	12%	0%	10%	31%	14%	0%	0%	0%	10%	1%	2%	5%	1%		1,718	1,720	2
<b>San Francisco</b>																		
Total Spectrum (MHz)	35.00	20.00	30.00	30.00	35.00	20.00	0.00	0.75	0.00	19.83	1.55	4.00	10.80	2.13	209.1			
As % of Total Spectrum	17%	10%	14%	14%	17%	10%	0%	0%	0%	9%	1%	2%	5%	1%		1,253	1,260	7
<b>Detroit</b>																		
Total Spectrum (MHz)	30.00	35.00	0.00	30.00	25.00	40.00	10.00	0.25	0.00	18.75	1.55	4.00	1.00	1.50	197.1			
As % of Total Spectrum	15%	18%	0%	15%	13%	20%	5%	0%	0%	10%	1%	2%	1%	1%		1,471	1,473	2
<b>Dallas</b>																		
Total Spectrum (MHz)	45.00	35.00	0.00	30.00	30.00	30.00	0.00	0.50	0.00	23.90	1.55	4.00	6.60	2.50	209.1			
As % of Total Spectrum	22%	17%	0%	14%	14%	14%	0%	0%	0%	11%	1%	2%	3%	1%		1,496	1,502	5
<b>Philadelphia</b>																		
Total Spectrum (MHz)	30.00	35.00	0.00	30.00	45.00	30.00	0.00	0.75	0.00	22.20	1.55	4.00	7.80	2.75	209.1			
As % of Total Spectrum	14%	17%	0%	14%	22%	14%	0%	0%	0%	11%	1%	2%	4%	1%		1,480	1,487	8
<b>Washington</b>																		
Total Spectrum (MHz)	40.00	35.00	0.00	30.00	45.00	20.00	0.00	0.50	0.00	20.20	1.55	4.00	10.30	2.50	209.1			
As % of Total Spectrum	19%	17%	0%	14%	22%	10%	0%	0%	0%	10%	1%	2%	5%	1%		1,508	1,512	5
<b>Atlanta</b>																		
Total Spectrum (MHz)	30.00	35.00	30.00	10.00	25.00	30.00	10.00	0.25	12.00	18.75	1.55	4.00	0.00	2.50	209.1			
As % of Total Spectrum	14%	17%	14%	5%	12%	14%	5%	0%	6%	9%	1%	2%	0%	1%		1,203	1,205	2

<sup>1</sup> Geographic regions are those used in Southern Linc's analysis.

<sup>2</sup> Includes 10 MHz of PCS spectrum in Washington, DC held by Dobson Communications Corp. (DCC).

<sup>3</sup> Other PCS spectrum is held by a single licensee in New York (Northcoast), Detroit (Nextwave), and Atlanta (Alltel).

<sup>4</sup> Source: Updated Attachment 1 to Exhibit B of the Assignment Applications, submitted in an ex parte letter to Lauren Kravets, Feb. 22, 2001.

<sup>5</sup> Assumes Southern Linc holds licenses in Atlanta for all 800 MHz channels not held by Nextel.

<sup>6</sup> Includes Nextel's 700 MHz Guard Band, 800 MHz and 900 MHz spectrum. Nextel spectrum is not contiguous; cellular and PCS licenses were assigned in blocks of at least 5 MHz (and up to 30 MHz).

Source for 800 and 900 MHz spectrum: Updated Attachment 1 to Exhibit B of the Assignment Applications, submitted in an ex parte letter to Lauren Kravets, Feb. 22, 2001. Source for 700 MHz Guard Band spectrum: FCC Results of Guard Band Auction.

<sup>7</sup> Source: Baumann and Siwek Affidavit, Tables EI\_7.1-EI\_7.9.

<sup>8</sup> Source: FCC Results of Guard Band Auction. Includes 1 MHz "A" band license, 1 MHz "A" band unaffiliated user, and 2 MHz "B" band unaffiliated user. Assumes unaffiliated users do not hold other spectrum in the same urban area.

<sup>9</sup> Assumes spectrum not held by Nextel or Southern Linc is evenly divided among 5 firms who do not hold any other spectrum in the same urban area.

<sup>10</sup> Assumes 900 MHz commercial spectrum (200 channels) not held by Nextel or Motorola is held by firms with 60 channels of spectrum (e.g. if 140 channels available after accounting for Nextel and Motorola, assume two firms each with 60 channels, one firm with the remainder, 20 channels.)

Source for Cellular and PCS spectrum holdings: Nextel.

**Table 3**

# Dispatch Concentration in Major Urban Areas Excluding PCS and Cellular Spectrum

Total Spectrum includes 220 MHz, 450 MHz, 700 MHz, 800 MHz (less public safety), and 900 MHz (less public safety) but excludes PCS and Cellular band dispatch communicatic

Region <sup>1</sup>	Southern			220 MHz	450 MHz <sup>4</sup>	Other 700 MHz	Other 800 MHz	Other 900 MHz	Total Spectrum Used for Dispatch	Total Pre-Transfer HHI	Total Post-Transfer HHI	Δ HHI
	Motorola	Linc <sup>2</sup>	Nextel <sup>3</sup>									
<b>New York</b>												
Total Spectrum (MHz)	1.00	0.00	7.50	1.55	20.00	4.00	10.35	7.25	51.6			
As % of Total Spectrum	2%	0%	15%	3%	39%	8%	20%	14%		498	554	56
<b>Los Angeles</b>												
Total Spectrum (MHz)	0.50	0.00	8.10	1.55	20.00	400%	9.15	7.00	50.3			
As % of Total Spectrum	1%	0%	16%	3%	40%	0.08	18%	14%		540	572	32
<b>Chicago</b>												
Total Spectrum (MHz)	0.25	0.00	7.74	1.55	20.00	4.00	9.80	7.75	51.1			
As % of Total Spectrum	0%	0%	15%	3%	39%	8%	19%	15%		515	530	15
<b>San Francisco</b>												
Total Spectrum (MHz)	0.75	0.00	7.48	1.55	20.00	400%	10.80	7.13	51.7			
As % of Total Spectrum	1%	0%	14%	3%	39%	0.08	21%	14%		501	543	42
<b>Detroit</b>												
Total Spectrum (MHz)	0.25	0.00	7.15	1.55	20.00	4.00	1.00	5.75	39.7			
As % of Total Spectrum	1%	0%	18%	4%	50%	10%	3%	14%		657	680	23
<b>Dallas</b>												
Total Spectrum (MHz)	0.50	0.00	8.73	1.55	20.00	400%	6.60	7.50	48.9			
As % of Total Spectrum	1%	0%	18%	3%	41%	0.08	14%	15%		585	622	37
<b>Philadelphia</b>												
Total Spectrum (MHz)	0.75	0.00	8.21	1.55	20.00	4.00	7.80	7.75	50.1			
As % of Total Spectrum	1%	0%	16%	3%	40%	8%	16%	15%		540	589	49
<b>Washington</b>												
Total Spectrum (MHz)	0.50	0.00	7.59	1.55	20.00	400%	10.30	7.50	51.4			
As % of Total Spectrum	1%	0%	15%	3%	39%	0.08	20%	15%		505	534	29
<b>Atlanta</b>												
Total Spectrum (MHz)	0.25	5.64	7.15	1.55	20.00	4.00	0.00	7.50	46.1			
As % of Total Spectrum	1%	12%	16%	3%	43%	9%	22%	16%		742	759	17

<sup>1</sup> Geographic regions are those used in Southern Linc's analysis.

<sup>2</sup> Excludes the 53% of Southern Linc's 800 MHz spectrum used for interconnect, based on the assumption that Southern Linc has same proportion of interconnect and dispatch calls as Nextel.

<sup>3</sup> Includes Nextel's 700 MHz Guard Band, 800 MHz, and 900 MHz spectrum. Excludes the 69% of Nextel's 800 MHz and 900 MHz spectrum used for interconnect.

<sup>4</sup> Assumes that spectrum is divided evenly among ten firms who do not hold any other spectrum in the same urban area.

See footnotes to Table 2 for description of my analysis of 220 MHz, 700 MHz Guard Band, 800 MHz, and 900 MHz bands.

Source: Sources as in Table 2.

## **Exhibit A**

### **Gregory L. Rosston**

1819 Edgewood Lane  
Menlo Park, CA 94025  
Phone (650) 566-8622  
Fax (707) 922-0185

Economics Department  
Stanford University  
Stanford, CA 94305-6072  
Phone (650) 566-9211  
Fax (707) 922-0185

#### **Employment**

Stanford University, Stanford, CA  
Deputy Director, Stanford Institute for Economic Policy Research, 1999-  
Research Fellow, Stanford Institute for Economic Policy Research, 1997-  
Lecturer in Economics and Public Policy, 1997-

Federal Communications Commission, Washington, DC  
Deputy Chief Economist, 1995-1997  
Acting Chief Economist, Common Carrier Bureau, 1996  
Senior Economist, Office of Plans and Policy, 1994-1995

Law and Economics Consulting Group, Berkeley, CA  
Senior Economist, 1990-1994

Economists Incorporated, Washington, DC  
Economist/Research Associate, 1986-1988

#### **Education**

Stanford University, M.A., Ph.D., in Economics, Specialized in the fields of Industrial Organization and Public Finance. 1986, 1994.

University of California, Berkeley, A.B. in Economics with Honors. 1984.

#### **Papers and Publications**

“An Economic Analysis of the Effects of FCC Regulation on Land Mobile Radio,” unpublished Ph.D. dissertation, Stanford University. 1994.

“Competition in Local Telecommunications: Implications of Unbundling for Antitrust Policy” in Brock, G., (ed.) Toward a Competitive Telecommunication Industry: Selected Papers from the 1994 Telecommunications Policy Research Conference, LEA Associates, Mahwah, NJ. 1995 (with Harris, R. and Teece, D.).

“Competition and 'Local' Communications: Innovation, Entry and Integration,” *Journal of Industrial and Corporate Change*. 1995 (with Teece, D.).

“Spectrum Flexibility will Promote Competition and the Public Interest,” *IEEE Communications Magazine*, December, 1995 pp 2-5. (with Hundt, R.).

“Interconnecting Interoperable Systems: The Regulators' Perspective.” *Information, Infrastructure and Policy*. 1996 (with Katz, M., and Anspacher, J.).

“Everything You Need To Know About Spectrum Auctions, But Didn't Think To Ask,” *Washington Telecom News*, Vol. 4, No. 5. February 5, 1996 p-5. (with Hundt, R.).

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“Competition and ‘Local’ Communications: Innovation, Entry and Integration,” in Noam, E., (ed.) The End of Territoriality in Communications: Globalism and Localism, Elsevier. 1997 (with Teece, D.).

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“Introduction,” in Waterman, D., and Rosston, G., (ed.s) (1997) Interconnection and The Internet: Selected Papers from the 1996 Telecommunications Policy Research Conference, LEA Associates, Mahwah, NJ. 1997 (with Waterman, D.).

“Comment on the Value of New Services in Telecommunications” *Brookings Papers on Microeconomic Activity--Microeconomics*, 1997.

“On the Record: Former FCC Economist Backs Universal Service Alternative” *Telecommunications Reports*, Vol. 63, No. 51. December 22, 1997, pp 51-53.

“Universal Service Reform: An Economist’s Perspective,” *Cable TV and New Media*. Vol XV No. 11, January, 1998, pp 1-4.

“Alternative Paths to Broadband Deployment,” *IEEE Communications Magazine*, July, 1998 pp 2-4. (with Hundt, R.).

“An Insiders' View of FCC Spectrum Auctions,” Stanford Institute for Economic Policy Research Working Paper No. 98-2, February, 1999. *Journal of Regulatory Economics*, Vol 17, No. 3, 253-289, 2000 (with Kwerel, E.).

“The High Cost of Universal Service,” *CCH Power and Telecom Law*, January-February 1999 (with Wimmer, B.).

“Effects of Unbundling Proposals on Cable Investment Incentives,” *The Party Line, Newsletter of the Communications Industry Committee, American Bar Association Section of Antitrust Law*, March 1999 (with Owen, B.)

“The ABC’s of Universal Service: Arbitrage, Big Bucks and Competition,” Stanford Institute for Economic Policy Research Working Paper No. 98-4, April, 1999. *Hastings Law Journal*, Vol. 50, No. 6, August 1999 (with Wimmer, B.).

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“The ‘State’ of Universal Service,” Stanford Institute for Economic Policy Research Working Paper No. 99-18, April 2000. *Information, Economics and Policy*, Vol. 12, No. 3. 261-283, September 2000 (with Wimmer, B.).

“From C to Shining C: Competition and Cross-Subsidy in Communications,” Stanford Institute for Economic Policy Research Working Paper No. 00-21, October 2000. *Forthcoming* in Compaine, B. and Greenstein, S. (ed.s) *Selected Papers from the 2000 Telecommunications Policy Research Conference*: MIT Press (with Wimmer, B.).

### **Other Professional Activities**

Referee for *American Economic Review*, *Rand Journal of Economics*, *Industrial and Corporate Change*, *Journal of Industrial Economics*, *Telecommunication Systems*.

FCC Economist Panel Hearing on the Economics of Interconnection, May, 1996.  
FCC Economist Panel Hearing on the Economics of RBOC Entry under Section 271, July, 1996.

FCC Economist Panel Hearing on Competitive Bidding for Universal Service Provision, March, 1997

Consultant for the World Bank, 1998.

FCC Academic Expert Panel on “A New FCC for the 21<sup>st</sup> Century,” June 1999.

FCC Academic Expert Panel on AT&T—MediaOne Merger, February, 2000.

**Awards**

Chairman's Distinguished Service Award, FCC, 1997.

University of California, Brad King Award for Young Alumni Service, 1994.

National Performance Review Hammer Award for Reinventing Government, 1994.

Telecommunications Policy Research Conference Graduate Student Paper Competition, 2nd Place, 1994.

John M. Olin Foundation Fellowship, 1989-1990.

Charles Mills Gayley Fellowship, 1985.

Stanford University Fellowship, 1984-1985.