

ATTACHMENT RAM-1
RESUME OF DR. ROBERT A. MERCER, PHD.

Experience

Principal, BroadView Telecommunications, LLC, March, 2000-Present

Provides strategic planning, education, and expert testimony related to public and private telecommunications infrastructures, considering technologies, network architectures, providers, and services supported. The work is currently focused on local exchange and long-haul competition, broadband integrated networks, and private enterprise networking. Specific examples include the analysis of competitive alternatives for the provision of local exchange services, and assessment of the state of long distance facilities and services competition.

Conducts telecommunications policy analyses, with particular current emphasis on the interconnection, unbundling, resale, and universal service aspects of the 1996 Telecommunications Act. This focuses on evaluating the cost of local exchange service provided by incumbent telephone companies and other competitive entities, and includes extensive involvement as an expert witness in federal and state regulatory proceedings.

Serves as an Adjunct Assistant Professor in the Interdisciplinary Telecommunications Department (ITD) and its successor program at the University of Colorado, where he has taught a course in advanced data communications and computer networking. Directs and participates on Master's thesis committees in the ITD, and also participates in effort to define and coordinate the program's curriculum, particularly as it pertains to data communications. Has previously developed and taught courses on telecommunications infrastructure directions, multi-protocol networking, TCP/IP, Asynchronous Transfer Mode (ATM), Open Systems Interconnection (OSI), network management, and telecommunications standards, and has presented numerous public seminars and talks on a variety of telecommunications topics.

President, and formerly Senior Vice President, Hatfield Associates, Inc., and HAI Consulting, Inc., 1987–March, 2000.

Provided strategic planning, analysis, and education related to the telecommunications infrastructure, with a particular emphasis in the late 1990's on federal and state regulatory proceedings dealing with implementation of the 1996 Telecommunications Act. Earlier work included extensive involvement in FCC and state proceedings on Open Network Architecture (ONA) and Video Dial Tone (VDT), and testimony before state regulatory bodies on the conditions necessary for local exchange competition to flourish. Was co-author of the well-known "Hatfield Report" and "Hatfield II Report" on the ONA concept, and of a report titled "The Enduring Local Bottleneck" which deals with the ability of alternative providers to enter the local exchange telecommunications business.

Department Head of Datakit Systems Engineering, AT&T Bell Laboratories, 1986-1987

Directed systems engineering of the Datakit product, a virtual circuit switching data communications product of AT&T Technologies. Participated extensively in AT&T planning of its data communications architecture, and the products and services resulting from that architecture.

Senior Executive, BDM Corporation, 1985-1986

Planned data communications networks for various defense agencies. Served as a consultant to several clients on data protocol issues. Developed market projections for secure LANs.

Assistant Vice President of Network Compatibility Planning, Bell Communications Research (Bellcore), 1983-1985

Directed Bellcore support of the Bell Operating Companies (BOCs) in meeting the technical Equal Access requirements of the Modified Final Judgement. Conducted technical fora with the Inter-exchange Carriers and other carriers on behalf of the BOCs. Managed the North American Numbering Plan. Directed Bellcore's involvement in standards-making efforts, and played a key role in the formation of a new U. S. standards committee, Committee T1. Managed the "technical regulatory" work at Bellcore, which analyzed technical aspects of various FCC proceedings, including the ISDN Inquiry, the consideration of how the Computer II rules applied to the divested BOCs, and Computer III. With respect to the latter, was heavily involved in the work on the Comparably Efficient Interconnection concept, which later led to the Open Network Architecture (ONA) concept.

Director of Network Architecture Planning, Bell Laboratories, 1981-1983

Managed early Bell System planning for the Integrated Services Digital Network (ISDN). Provided project management to two key data network planning and implementation activities. Managed Bell Laboratories involvement in several U. S. and international standardization activities. Participated in planning for the Bell Laboratories reorganization in preparation for the AT&T Divestiture.

Division Manager of Network Services Standards, AT&T, 1979-1981

Managed the effort to describe the interface and performance characteristics of the Bell System network, particularly as necessary to meet the terms of the FCC Registration Program. Directed several components of the Bell Systems participation in international telecommunications standards committee CCITT.

Supervisor and Member of Technical Staff, Bell Laboratories, 1973-1979

Analyses of network performance issues and customer perceptions of performance, highlighted by direction of a pioneering study of customer retrial and abandonment behavior during long-distance telephone calls.

Planning for operational processes and operations support systems associated with new Bell System services.

Education

Ph.D., Physics (1969), Johns Hopkins University.

Doctoral Dissertation Title:

$K^+ \delta^-$ Scattering and Related Effects in the Reaction $K^+ p \rightarrow K^+ \delta^- \Delta^{++}$ at 5.43 BeV/c (1969).

B.S., Physics (1964), Carnegie Institute of Technology (now Carnegie-Mellon University).

Other Activities and Awards

Former member of the Board of Directors, American National Standards Institute. Member of the Institute of Electrical and Electronic Engineers (IEEE) and Sigma Xi, the scientific research society.

Graduate Courses Taught

ATM Overview	ATM Technology
Broadband Applications Essentials	Broadband Wide Area Networks
Computer Communications Essentials	Computer Networks
Advanced Data Communications	Data Communications Essentials
Internetworking and TCP/IP Overview	Local Area Network Overview
Math and Electrical Principles of Telecom	Multi-Protocol Networking
Networking Trends and Directions	Network Management
T1/T3 Networking Principles	TCP/IP Architecture
Telecommunications Basics	Telecommunications Industry Essentials
Telecommunications Standards	Voice Communications Basics

Participation in Regulatory Proceedings

Declaration filed by AT&T and WorldCom with the California Public Utilities Commission on the use of the HAI Model Version 5.3 to estimate the cost of UNEs provided by Verizon California, San Francisco, California, November, 2003.

Testimony before the Regulatory Commission of Alaska describing the unbundled network element (UNE) cost models employed by GCI in developing its UNE rate proposals, the results produced by those models, and the differences between GCI's and ACS of Anchorage's cost models, Anchorage, Alaska, November, 2003. Preceded by written direct, rebuttal, and surrebuttal testimony.

"Methodologies and Models for Estimating Forward-Looking Costs," presentation to a symposium of government and telecommunications operators sponsored by the Superintendencia General de

Electricidad y Telecomunicaciones of El Salvador under the auspices of the U.S. Trade Development Agency, San Salvador, El Salvador, October, 2003.

Testimony before the Regulatory Commission of Alaska concerning engineering, algorithmic, and inputs issues associated with the cost model developed by ACS of Alaska for the purpose of estimating the cost of unbundled loops it provides, Anchorage, Alaska, April-May, 2003.

Rebuttal Declaration filed by AT&T and WorldCom with the California Public Utilities Commission on the use of the HAI Model Version 5.3 to estimate the cost of UNEs provided by SBC-Pacific Bell, San Francisco, California, March, 2003. Preceded by an Opening Declaration and Reply Declaration in October, 2002, and February, 2003, respectively.

Affidavit filed by GCI with the Regulatory Commission of Alaska comparing and contrasting the networks used by GCI and ACS of Alaska to provide telephone service, Anchorage, Alaska, January, 2003.

Affidavits filed by GCI with the Regulatory Commission of Alaska concerning the appropriate interim rates GCI should pay ACS of Anchorage for unbundled loops, switching, and transport, Anchorage, Alaska, January, 2003.

Declaration coauthored by Dean Fassett submitted to the Federal Communications Commission demonstrating that the rates for unbundled loops adopted by the Colorado Public Service Commission are based on a flawed analysis of Qwest's costs, Washington, DC, July, 2002 and October, 2002.

Declaration coauthored by Richard A. Chandler submitted to the Federal Communications Commission demonstrating that the rates for unbundled local switching adopted by the Colorado Public Service Commission are based on a flawed analysis of Qwest's costs, Washington, DC, July, 2002 and October, 2002.

Testimony before the Oklahoma Corporation Commission critiquing the cost model put forth by the Rural Local Exchange Carriers in arbitrations with the Cellular Mobile Radio Service providers, Oklahoma City, Oklahoma, June, 2002. Preceded by the filing of written direct, rebuttal, and summary testimony.

Testimony before the Regulatory Commission of Alaska contrasting the FCC's Synthesis Model and ACS' Cost Models as vehicles for estimating the cost of unbundled network elements (UNEs), Anchorage, Alaska, February, 2002.

Testimony before the Massachusetts Department of Telecommunications and Energy on the use of the HAI Model, Version 5.2a-MA, to estimate the cost of UNEs provided by Verizon of Massachusetts, Boston, Massachusetts, February, 2002. Preceded by the filing of written direct testimony in May, 2001, and surrebuttal testimony in December, 2001.

Affidavit submitted to the Regulatory Commission of Alaska on defects in Versions 7.2 and 8.0 of the cost model submitted by ACS of Anchorage in proceeding U-96-89 on UNE rate arbitration, Anchorage, Alaska, August, 2001.

Testimony before the New Jersey Board of Public Utilities on the use of the HAI Model, Version 5.2a, to estimate the cost of UNEs provided by Verizon – New Jersey, Newark, New Jersey, January, 2001. Preceded by the filing of written direct testimony in July, 2000, and rebuttal testimony in October, 2000.

Testimony before the New York Public Service Commission on the use of the HAI Model, Version 5.2a-NY, to estimate the cost of UNEs provided by Verizon – New York, Albany, New York, December, 2000. Preceded by the filing of written direct testimony in February, 2000, additional direct testimony in April, 2000, and June, 2000, and panel rebuttal testimony in October, 2000.

Affidavit filed by ICG Telecom Group with the FCC dealing with the distinction between voice exchange access calls and local calls to Internet Service Providers, Washington, DC, August, 2000.

Testimony on network technology issues in a Colorado Public Utility Commission arbitration proceeding on the interconnection of the local exchange networks of US West and ICG Telecom Group, Inc., Denver, Colorado, June, 2000. Preceded by written rebuttal testimony.

Testimony in a Regulatory Commission of Alaska arbitration proceeding dealing with the use of the FCC Synthesis Cost Proxy Model to estimate the cost of UNEs provided by Alaska Communications System (ACS) to GCI Communications Corporation, Anchorage, Alaska, May, 2000. Preceded by an affidavit filed with the Alaska Public Utility Commission dealing with the reasons why the HAI Model is the appropriate methodology for providing UNEs than is the cost model submitted by ACS.

Testimony before the Oregon Public Utility Commission dealing with the use of the HAI Model for estimating the cost of universal service, Docket UM 731 Phase IV, Salem, Oregon, October, 1999. Preceded by written direct testimony and rebuttal testimony.

Written direct testimony and rebuttal testimony filed with the State Corporation Commission of the State of Kansas dealing with the use of the HAI Model for estimating the cost of universal service, Topeka, Kansas, April, 1999.

Testimony before the Nevada Public Utilities Commission dealing with the use of the Nevada HAI Model to estimate the cost of UNEs provided by Nevada Bell, Reno, Nevada, November, 1998. Preceded by written testimony and presentations to several workshops on the Nevada HAI Model.

Testimony before the Texas Public Utilities Commission dealing with appropriate inputs values to be used in the HAI Model Release 5.0a for estimating the cost of universal service, Austin, Texas, September, 1998.

Testimony before the Washington Utilities and Transportation Commission dealing with the appropriate methodology for estimating the cost of universal service, Olympia, Washington, September, 1998. Preceded by written direct testimony and rebuttal testimony.

Testimony before the Nevada Public Utilities Commission dealing with the use of the Nevada HAI Model to estimate the cost of UNEs provided by Centel, Carson City, Nevada, August, 1998. Preceded by written testimony and presentations to several workshops on the Nevada HAI Model.

Testimony before the Texas Public Utilities Commission dealing with the use of the HAI Model Release 5.0a to estimate the cost of universal service, Austin, Texas, June and March, 1998. Preceded by written direct testimony, rebuttal testimony, supplemental rebuttal testimony, supplemental testimony, and reply to supplemental testimony.

Testimony before the Minnesota Public Utilities Commission dealing with the use of the HAI Model Release 5.0a to estimate the cost of universal service, St. Paul, Minnesota, February, 1998. Preceded by written testimony, supplemental testimony, and rebuttal testimony.

Testimony before the Colorado Public Utilities Commission dealing with the use of the Hatfield Model 4.0 to estimate the cost of universal service, Denver, Colorado, December, 1997. Preceded by written direct testimony, supplemental direct testimony, and rebuttal testimony.

Presentation to the Oregon Public Utilities Commission workshop on cost proxy models dealing with the Hatfield Model 4.0, Salem, Oregon, November, 1997.

Testimony before the New Jersey Board of Public Utilities dealing with the cost of universal service and interexchange carrier access, Newark, New Jersey, October, 1997. Preceded by written testimony filed September, 1997.

Presentation to a Pennsylvania Public Utility Commission Universal Service Workshop dealing with the Hatfield Model 4.0, Harrisburg, Pennsylvania, October, 1997.

Presentation to the Colorado Public Utility Commission Staff and the Office of Consumer Counsel dealing with the Hatfield Model 4.0, Denver, CO, July, 1997.

Testimony before the Washington Utilities and Transportation Commission dealing with the appropriate methodology for estimating the cost of UNEs provided by incumbent local exchange carriers, Olympia, Washington, July, 1997. Preceded by written testimony, rebuttal testimony, and surrebuttal testimony.

Testimony before the Virginia State Corporation Commission dealing with the cost of UNEs provided by Bell Atlantic of Virginia, Richmond, Virginia, June, 1997. Preceded by written testimony and rebuttal testimony.

Presentation to the Nevada Public Service Commission Cost Workshop dealing with the appropriate methodology for estimating the cost of universal local exchange service, Carson City, Nevada, April, 1997.

Presentation to the Colorado Public Utilities Commission Staff High Cost Fund Task Force dealing with the appropriate methodology for estimating the cost of universal local exchange service, Denver, Colorado, March, 1997.

Presentation to the Washington Utilities and Transportation Commission staff dealing with proxy cost models, and Hatfield Model Release 3, Olympia, WA, February, 1997.

Presentation to the Federal-State Joint Board on Universal Service dealing with Version 3 of the Hatfield Model, Washington, DC, January, 1997.

Testimony before the New Jersey Board of Public Utilities dealing with the cost of UNEs in connection with the generic arbitration proceeding, Newark, NJ, January, 1997. Preceded by written testimony.

Testimony before the Washington Utilities and Transportation Commission dealing with the cost of UNEs in connection with MCI's arbitration case vs. U W West, Olympia, WA, November, 1996. Preceded by written testimony.

Testimony before the Commonwealth of Massachusetts Department of Public Utilities dealing with the cost of UNEs in connection with MCI's arbitration case vs. NYNEX, Boston, MA, November, 1996. Preceded by written testimony.

Testimony before the New Jersey Board of Public Utilities dealing with the cost of UNEs in connection with MCI's arbitration case vs. Bell Atlantic of New Jersey, Morristown, NJ, November, 1996. Preceded by written testimony.

Testimony before the Texas Public Utilities Commission dealing with the cost of UNEs in connection with AT&T's and MCI's consolidated arbitration case vs. GTE, Austin, Texas, November, 1996. Preceded by written testimony.

Testimony before the New York Public Service Commission dealing with the cost of UNEs in connection with MCI's arbitration case with NYNEX, Albany, NY, October, 1996. Preceded by written testimony.

Testimony before the Washington Utilities and Transportation Commission dealing with the cost of UNEs in connection with three arbitration cases: AT&T vs. U S West, AT&T vs. GTE, and MCI vs. U S West, Olympia, WA, October - November, 1996. Preceded by written testimony and rebuttal testimony.

Testimony before the Utah Public Service Commission dealing with the cost of UNEs in connection with AT&T's arbitration case vs. U S West, Salt Lake City, UT, October, 1996. Preceded by written testimony.

Presentation on the Hatfield Model to the arbitrator in the Massachusetts arbitrations of AT&T and MCI vs. NYNEX, Boston, MA, October, 1996.

Testimony before the Texas Public Utilities Commission dealing with the cost of UNEs in connection with AT&T's and MCI's consolidated arbitration case vs. Southwestern Bell, Austin, Texas, October, 1996. Preceded by written testimony.

Testimony before the California Public Utilities Commission dealing with the cost of UNEs in connection with four arbitration cases: AT&T vs. Pacific Bell, AT&T vs. GTE, MCI vs. Pacific Bell, and MCI vs. GTE, San Francisco, California, September - October, 1996. Preceded by written testimony and rebuttal testimony.

Testimony before the New Jersey Board of Public Utilities dealing with the cost of UNEs in connection with AT&T's arbitration case with Bell Atlantic of New Jersey, Newark, New Jersey, September, 1996. Preceded by written testimony.

Testimony before the New Jersey Board of Public Utilities dealing with the cost of basic local exchange service, Newark, New Jersey, September, 1996. Preceded by written testimony and rebuttal testimony.

Testimony before the California Public Utilities Commission dealing with the state of local exchange competition, San Francisco, California, August, 1996. Preceded by prefiled written testimony and rebuttal testimony.

Presentations on the Hatfield Model to the staffs of the Federal-State Joint Board on Universal Service, Iowa Department of Commerce Utilities Board, Texas Public Utilities Commission, New Jersey Board of Public Utilities, and New York Public Service Commission, July-August, 1996.

Testimony before the Utah Public Service Commission dealing with a methodology to estimate the cost of universal service provided by U S WEST in the state of Utah, Salt Lake City, Utah, May, 1996. Preceded by prefiled written testimony and surrebuttal testimony.

Testimony before the California Public Utilities Commission dealing with the estimated cost of basic telephone service provided by Pacific Bell and other local exchange carriers in the state of California, San Francisco, California, May, 1996. Preceded by prefiled written testimony, rebuttal testimony, and surrebuttal testimony.

Testimony before the Maryland Public Service Commission dealing with the cost of local exchange service in the state of Maryland, in conjunction with MCI's Competition Plus initiative, Baltimore, MD, April, 1996, preceded by prefiled written testimony and surrebuttal testimony.

Presentation to the Ministry of Communications and Transportation of Mexico on Telmex' costs to provide interconnection to long distance carriers, Mexico City, Mexico, March, 1996.

Testimony before the Pennsylvania Public Service Commission dealing with a methodology to estimate the cost of universal service provided by Bell Atlantic of Pennsylvania and other local exchange carriers in the state of Pennsylvania, Harrisburg, PA, March, 1996. Preceded by prefiled written testimony, rebuttal testimony, and surrebuttal testimony.

Testimony before the Washington Utilities and Transportation Commission dealing with the cost of local exchange service provided by U S WEST in the state of Washington, Seattle, Washington, January, 1996. Preceded by prefiled written testimony, amended testimony, and surrebuttal testimony.

Testimony before the Maryland Public Service Commission dealing with Bell Atlantic's cost of providing basic local exchange service in Maryland, August, 1995. Preceded by prefiled written testimony.

"Modeling Basic Universal Service for Pennsylvania," with A. Daniel Kelley, presentation to the staff of the Pennsylvania Public Service Commission, Harrisburg, PA, July, 1995.

Testimony before the Illinois Commerce Commission dealing with AT&T's proposal on conditions to test the potential for local exchange competition, and Ameritech's proposed Customer First Plan, Chicago, IL, October, 1994. Preceded by prefiled written testimonies concerning the two proposals, rebuttal testimony, and surrebuttal testimony.

Testimony before the Canadian Radio-Television and Telecommunications Commission on behalf of Unitel Communications, Inc. concerning Comparably Efficient Interconnection and Open Network Architecture, Ottawa, Ontario, Canada, December, 1993.

Rebuttal testimony before the Georgia Public Service Commission on behalf of the Georgia Cable Television Association concerning Southern Bell's Open Network Architecture tariff filings in Docket 4018-U, Atlanta, GA, February, 1993.

Testimony before the Georgia Public Service Commission on behalf of the Georgia Cable Television Association concerning Southern Bell's Open Network Architecture tariff filings in Docket 4018-U, Atlanta, GA, January, 1993.

Prefiled testimony and rebuttal testimony submitted to the Oregon Public Utilities Commission on behalf of Electric Lightwave, Inc. (ELI) dealing with the comparability of services offered by ELI, U S WEST, and GTE Northwest, January-February, 1993.

Testimony before the Florida Public Service Commission on behalf of the Florida Cable Television Association concerning Southern Bell's plans for the Broadband Integrated Services Digital Network, Tallahassee, Florida, March, 1990.

Publications and Talks

“Why ILECs Won’t Invest: A Rejoinder,” *Business Communications Review*, August, 2003, p. 59.

“Overview of the Proposed Women’s Training Center Curriculum,” seminar presented to potential faculty, students and administrators of the Central Asia Women’s Institute for Telecommunications and Information Technologies, Tashkent, Uzbekistan, March, 2003.

“New Telecom Technologies: Cable and Satellite Technologies,” talk presented to the 5th Annual Telecommunications Law Conference, Dallas, TX, March, 2003.

“Current Telecom Trends and Education’s Response,” seminar presented to potential stakeholders in Central Asia Women’s Institute for Telecommunications and Information Technologies, Tashkent, Uzbekistan, January, 2003.

“The Economics of Convergence,” presented to the Law Seminars International Conference on Cable/Telecommunications Convergence, Atlanta, Georgia, November, 2000

Declaration concerning directions changes in telecommunications technology and networks, co-authored with A. Daniel Kelley, filed by MCI WorldCom and Sprint Corporation with the Federal Communications Commission in connection with the proposed merger of the two companies, Washington, DC, November, 1999.

Declaration concerning the potential for technical discrimination by Bell Atlantic filed by MCI WorldCom with the Federal Communications Commission in connection with Bell Atlantic's application for authorization to provide in-region interLATA services under Section 271 of the 1996 Telecommunications Act, CC Docket No. 99-295, Washington, DC, October, 1999.

"Access Technologies," presentation to the ICA Network Technology Institute, Boulder, Colorado, August, 1999.

"Where Telecommunications Technology and the Industry are Heading," presentation to the Law Seminars International Conference on Local Telecommunications Infrastructure Options, Dallas, Texas, June, 1999.

"Utilizing the Total Element Long Run Incremental Costing Models (TELRIC) to Price Network Services," panel discussion session at the conference "Controlling and Allocating Costs in Telecommunications," Washington, DC, January, 1999.

"Future Directions in Telecommunications," seminar for the University of Denver Telecommunications Workshop for ICG-Netcom, Denver, Colorado, July, 1998.

"The Internet and the Telecommunications Infrastructure: If It's Broken, Fix It," presentation to the ICA Summer Program, Boulder, Colorado, June 1998.

"Practically Applying the HAI Model and the Benchmark Cost Proxy Model," with Kevin Deno-Duffy, workshop at the conference "Exploiting Cost Allocation Strategies in Telecommunications," San Diego, CA, June, 1998.

"Hatfield Model Release 5.0 Model Description," principal author, published by the International Transcription Service, Washington, DC, December, 1997.

"The Emerging Telecommunications Infrastructure," Telecommunications Reports seminar, Washington, DC, December, 1997.

"Practical Applications of the Hatfield Model and Benchmark Cost Proxy Model," with James Dunbar, workshop at the conference "Exploiting Cost Allocation Strategies in Telecommunications," Atlanta, GA, September, 1997.

"The Great Debate: Exploring the Applicability of 'The Models'," participation in a panel discussion at the conference "Exploiting Cost Allocation Strategies in Telecommunications," Atlanta, GA, September, 1997.

"Hatfield Model Release 4.0 Model Description," principal author, published by the International Transcription Service, Washington, DC, August, 1997.

"Emerging Telephone Networks and the Internet," Telecommunications Reports seminar, San Francisco, California, May, 1997.

"Hatfield Model Release 3.1 Model Description," principal author, published by the International Transcription Service, Washington, DC, February, 1997.

Presentation to the Washington Utilities and Transportation Commission staff dealing with proxy cost models, and Hatfield Model Release 3, Olympia, WA, February, 1997.

"Emerging Telephone Networks and the Internet," Telecommunications Reports seminar, Washington, DC, October, 1996.

Testimony before the New York Public Service Commission dealing with the cost of UNEs in connection with MCI's arbitration case with NYNEX, Albany, NY, October, 1996. Preceded by written testimony.

Local Telecommunications Cost Modeling: Theory and Practice, coauthored with Richard Chandler and A. Daniel Kelley, presented at the Twenty-Fourth Annual Telecommunications Policy Research Conference, Georgia, September, 1996.

"Overview ... Let the Games Begin," Participation in a panel discussion at the Telecommunications Reports Conference on Interconnection and the Competitive Checklist, Washington, DC, June, 1996.

"Local Loop Competition," talk presented to ICA Summer Program, University of Colorado, Boulder, CO, June, 1996.

"A Look at the Future: Business and Industry Experts Discuss the Implications of the Act," participation in a panel discussion at the conference "The Telecommunications Act of 1996," Denver, Colorado, March, 1996.

"Overview of Enterprise Network Developments," IEEE Communications Magazine, January, 1996, p. 30.

"Modeling Basic Universal Service for Pennsylvania," with A. Daniel Kelley, presentation to the staff of the Pennsylvania Public Service Commission, Harrisburg, PA, July, 1995.

"A Model For Determining the Cost of Basic Universal Service in Pennsylvania," with A. Daniel Kelley and R. Chandler, paper submitted to the Pennsylvania Public Service Commission in Docket L-00950101, Harrisburg, PA, July, 1995

"ONA: A Promise Not Realized -- Reprise," with A. Daniel Kelley, paper filed by MCI Communications Corporation and others in the FCC's Notice of Proposed Rulemaking in the Computer III Remand Proceeding, Washington, DC, April, 1995.

Declaration (no title) filed by California Cable Television Association with the Federal Communications Commission in connection with Pacific Bell's Section 214 Applications to construct Video Dialtone facilities, Washington, DC, April, 1995.

"Emerging Carrier Technologies & Architectures," Telecommunications Reports seminar, Washington, DC, March, 1995.

"Evolving the Physical Network," seminar session at the ICA Annual Conference, Anaheim, CA, March, 1995.

Affidavit (no title) filed by California Cable Television Association with the Federal Communications Commission in connection with Pacific Bell's Section 214 Applications to construct Video Dialtone facilities, Washington, DC, January, 1995.

"Fast Lane or Frontage Road: The State of the Infrastructure," Experts' Panel Discussion at the Convergence '94 Conference on Opportunities on the Information Superhighway, Washington, DC, November, 1994.

"Telecomm Fundamentals," pre-conference seminar presented at the Convergence '94 Conference, Washington, DC, November, 1994.

"Telecommunications Technology" and "Utility Applications of Telecommunications," chapters in report titled "Business Opportunities and Risks for Electric Utilities in the National Information Infrastructure," published by the Electric Power Research Institute, Palo Alto, CA, October, 1994.

"Predictions and Outlook for Reinventing the `Last Mile' in View of New Applications and Technologies," Experts' Panel Discussion at the Telecommunications Reports Conference on New Local Loop Technologies and Applications, Washington, DC, October, 1994.

"Emerging Local Loop Technologies and Architectures," Telecommunication Reports seminar, Washington, DC, October, 1994.

"VSATs Link Far-Flung LANS," with S. Kroder, Business Communications Review, October, 1994, p. 51.

"Emerging Local Loop Technologies and Architectures," Telecommunication Reports seminar, Washington, DC, October, 1994.

"VSATs Link Far-Flung LANS," with S. Kroder, Business Communications Review, October, 1994, p. 51.

"The Cost of Basic Universal Service," talk presented to the National Association of Regulatory and Utility Commissioners (NARUC) Summer Meeting, San Diego, CA, July, 1994.

"Technical and Economic Issues in the Further Notice," with A. Daniel Kelley, paper filed by Time Warner Entertainment Company in the FCC's Further Notice of Proposed Rulemaking, Docket 94-28, Washington, DC, July, 1994.

"Applying Network Architectures," talk presented to ICA Summer Program, University of Colorado, Boulder, CO, June, 1994.

"Evolution of Access Providers and Carrier Technologies," talk presented to ICA Summer Program, University of Colorado, Boulder, CO, June, 1994.

"The Vision and Reality of Cable Television Company Entry into Telecommunications," paper prepared for and filed by the Maryland Cable Television Association in connection with Maryland Public Service Commission Case No. 8587, Baltimore, MD, June, 1994.

Affidavit (no title) filed by the California Cable Television Association with the Federal Communications Commission in connection with Pacific Bell's Section 214 Applications to construct Video Dialtone facilities, Washington, DC, June, 1994.

"Choosing an Effective Network Migration Strategy," talk and panel moderator for session at ICA Expo '94, Dallas, TX, May, 1994.

"Management of the Enterprise Network: SNMP, SMP, CMOT," talk presented to the ICA Expo '94, Dallas, TX, May, 1994.

"The Information Superhighway: The Next Business Frontier," Denver Business & Economics Council panel discussion involving self and others, Denver, CO, April, 1994.

"Telecommunications Developments," talk presented to Canadian Cable Television Association Strategic Planning Committee, Nassau, Bahamas, April, 1994.

"Emerging Local Loop Technologies and Architectures," Telecommunication Reports seminar, Washington, DC, April, 1994, with D. Hatfield.

"Telecommunications Technology - Today and Tomorrow," talk presented to the EFT Association Annual Conference, Tysons Corner, VA, March, 1994.

Affidavit (no title) filed by California Cable Television Association with the Federal Communications Commission in connection with Pacific Bell's Section 214 applications to construct Video Dialtone facilities, Washington, DC, March, 1994.

"The Enduring Local Bottleneck: Monopoly Power and the Local Exchange Carriers," with Economics and Technology, Inc., published report, February, 1994.

"Emerging Local Loop Technologies and Architectures," Telecommunication Reports seminar, Washington, DC, December, 1993, with D. Hatfield.

"Understanding Telecommunications Technology for the Cable Television Professional," post-conference tutorial presented at the Convergence '93 Conference, Washington, DC, November, 1993.

"Regulatory Parity and Public Policy," paper filed by Time Warner Entertainment Company as part of its Reply Comments in FCC docket MM Docket 93-215, September, 1993, with A. Daniel Kelley.

"Further Views on the Role of CEI/ONA," paper filed by Unitel Communications Inc. as part of its Amendments to Evidence in the Canadian Radio-television Telecommunications Commission (CRTC) Public Notice 92-78, September, 1993.

"The Basics of Numbering, Dialing, and SS#7-Based Call Routing," tutorial presented at the Telecommunication Reports Conference on Telecom Numbering and Portability, Washington, DC, August, 1993.

"Overview and Analysis of Numbering Issues," talk presented at the Telecommunication Reports Conference on Telecom Numbering and Portability, Washington, DC, August, 1993.

"Enabling Technologies for the Cable-Based Electronic Superhighway," talk to the CableLabs Conference on Visions of the Electronic Superhighway, Breckenridge, CO, July, 1993.

"Data Communications and Network Developments," CableLabs, Inc. seminar, Denver, CO, July, 1993.

"Emerging Hybrid Network Environment," talk presented to the ICA Summer Program, University of Colorado, Boulder, Colorado, June, 1993.

"Understanding Telecommunications Technology for the Cable Television Professional," pre-conference tutorial presented at the Convergence '93 Conference, Denver, CO, May, 1993.

"Technological Perspective: Advances in Technology That Have Formed the Basis for Local Competition," talk presented at CompTel's Educational Seminar on Competitive Local Access, New Orleans, LA, May, 1993.

"Cross-Subsidy Concerns Raised by Local Exchange Carrier Provision of Video Dial Tone Services," paper filed as part of a petition by the National Cable Television Association to the Federal Communications Commission, Washington, DC, April, 1993, with A. Daniel Kelley.

"AIN Interconnection -- A Non-Regulated Provider View," talk presented at the AIN ComForum session on the regulatory and policy aspects of AIN, Denver, CO, March, 1993.

"IIA/AMIS Forum" session at Voice '92 Conference, Atlanta, Georgia, November, 1992, Moderator and speaker.

"Cracking the Telecom Code," CableLabs, Inc. seminar, Denver, CO, November, 1992, with Dale Hatfield and A. Daniel Kelley.

"Emerging Local Loop Technologies and Architectures," Telecommunication Reports seminar, Washington, DC, November, 1992, with Dale Hatfield.

"A General Approach to Local Exchange Carrier Pricing and Interconnection Issues," presented at the Twentieth Annual Telecommunications Policy Research Conference, Solomons Island, Maryland, September, 1992, A. Daniel Kelley.

"Frame Relay: `Caveat Emperor' (Let the Buyer Be Wary of the Leader)," Telecom Data Report, August 1, 1992, p. 14.

"LAN Basics," Intertec Publishing Corp., Chicago, IL, ISBN 0-917845-20-X, May, 1992, co-authored with Roberta Martine.

"Transmission Control Protocol/Internet Protocol (TCP/IP) Architecture," seminar presented in the International Communications Association Master the Fundamentals of Telecommunications Symposium, Atlanta, Georgia, May, 1992.

"New Local Exchange Technology: Preserving the Bottleneck or Providing Competitive Alternatives?," principal author, paper filed by MCI in FCC's Advanced Intelligent Network Inquiry, April, 1992.

"The Audio Messaging Interchange Specification (AMIS)," chapter in Managing Voice Networks, Datapro Information Services Group, McGraw-Hill, Inc, Delran, NJ, 1992.

"Alternative Broadband Networks," seminar presented in the University of Colorado Telecommunications Program, November, 1991.

"The Technology of Broadband Networks," chapter in book "Integrated Broadband Networks - The Public Policy Issues," North-Holland, Amsterdam, Netherlands, 1991.

Interconnection of LANs in the 1990s, talk presented to the ICA Summer Program, University of Colorado, Boulder, Colorado, June, 1991.

"Telecommunications Technology: An Introduction and Discussion of Future Developments," talk presented to the Annenberg Washington Program Summer Faculty Workshop, Washington, DC, June, 1991.

"Local Loop Technologies and Strategies," a Telecommunication Reports seminar, Atlanta, Georgia, May, 1991, also presented on four prior occasions during 1990-1991, with Dale Hatfield.

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