KARLA L. HOFFMAN

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Systems Engineering and Operations Research Department
George Mason University
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Campus Location :
Room 2207, Nguyen Engineering Bldg.

Academic Degrees:

BA	1969	Mathematics Rutgers University
MBA	1971	Operations Research George Washington University School of Business
DSc	1975	Operations Research George Washington University School of Engineering and Applied Sciences Dissertation: A Successive Underestimation Function for Concave Minimization (James Falk, Director)

George Mason University Positions:

2002 – present	Professor	Systems Engineering and Operations Research (SEOR) Department
1998 – 2001	Chair	SEOR Department
1997 – 1998	Chair	Operations Research and Operations Engineering (ORE) Department
1996 – 1997	Acting Chair	ORE Department
1989 – present	Professor	SEOR Department
1984 – 1989	Assoc Professor	Operations Research and Applied Statistics Department

Prior Positions:

1976 – 1984	Mathematician	Operations Research Division Center for Applied Mathematics

		National Institute of Standards and Technology
1977 – 1984	Assoc. Prof. Lecturer	The George Washington University Operations Research Department
Spring, 1982	Visiting Assoc. Prof.	The University of Maryland College of Business Administration
1975 – 1976	Postdoctoral Research Fellow	National Academy of Science at National Institute of Standards and Technology
1973 – 1975	Research Assistant	Institute for Management Science and Engineering George Washington University
1972 – 1973	Operations Research Analyst	Internal Revenue Service Washington, DC

Consulting Activities:

Serves as a consultant to Decisive Analytics Corporation on the dispatching, scheduling and routing of trucks and to the Federal Communications Commission on auction design and implementation. She has previously consulted to Shell Oil Company on ship routing, Disney Corporation on bus routing, Sverdup Technologies on facility location, Jacobs Technologies on facility location, the RAND Corp on optimization modeling, Bell Atlantic on capital budgeting and new technology evaluation, Rohm and Hess on new technology assessment, PCS One on game theory and auction strategies; and USAir, Delta and Northwest Airlines on fleet and crew scheduling, and to Hughes Data Systems, BTG, and Trident Systems on bidding strategies. She has also served as a consultant to a variety of government agencies including FERC, DOT, DOE and DOD.

Research Interests:

Combinatorial Optimization, Scheduling and Routing algorithms, Auction Theory and Design, Global Optimization, Mathematical Modeling, Analysis of Algorithms, Software Testing

Awards:

2012	Tutorial plenary Speaker, European Operations Research Society annual meeting in Vilnius, Lithuania. Tutorial on combinatorial auctions.
2010	Outstanding Research Faculty Award, Volgenau School of Information Technology and Engineering.
2009	The Harvey J. Greenberg Impact Award for Service to the INFORMS Computing Society (ICS). Karla Hoffman was the first recipient of this award in January.
2008	Institute for Operations Research and the Mgt. Sciences (INFORMS) Omega Rho Plenary Speaker. Omega Rho is the honor society of INFORMS and they award one person the honor of speaking at the National Meeting.
2007	Invited to give talk in honor of the retirement of Arthur Geoffrion
2006	Omega Rho Honor Society of INFORMS, 15th Anrnoff Lecture on the Practice of Management Science
2006	IHEEP Conference Invited speaker at the 48th Annual International HEEP (Highway Engineering) Conference in Williamsburg VA September
2005	Kimball Medal, The Institute for Operations Research and the Management Sciences
2003	Fellow of the Institute for Operations Research and the Management Sciences
1989	Distinguished Faculty Award, George Mason University (Annual award honoring one outstanding faculty member from each school within G.M.U.)
1984	National Institute of Standards and Technology Applied Research Award (Highest award given for applied research in a non-measurement field - only mathematician to receive this award)
1984	U.S. Department of Commerce Silver Medal for Meritorious Service
1975-1976	National Science Foundation/National Academy of Sciences Postdoctoral Research Fellow
1969	Cum Laude, Rutgers University

Research Grants and Contracts:

2010-2011	ARRA: Metroplex Optimization Model Expansion and Analysis (Co-PI with George Donohue and Lance Sherry) $427,411.

2008-2011 NASA: Market-based and Auction-based models and algorithms for en-route airspace allocation and configuration (Co-PI with George Donohue and Lance Sherry) $1,196,526.

2007-2010 NASA: Metroplex Operations (Co-PI with George Donohue and Lance Sherry) $1,151,532.

2003 - 2008 "ITR: Very Efficient Network Simulation Methods for Auctioning and Collaborative Models of Air Traffic Management," National Science Foundation, co-PI, with C. H. Chen (PI), A. Deshmukh, G. Donohue, K. Hoffman, and D. Gross, $1,082,946

2003 - 2008 NSF: Very Efficient Network Simulation Methods for Auctioning and Collaborative Models of Air Traffic Management (Co-Pi, with Chun-Hung Chen, George Donohue, Jana Kosecka, Brian Mark and John Shortle) $823,727.

2004-2007 Federal Aviation Administration: NEXTOR: Symposium on Congestion Management (CoPI with Michael Ball) $50,000.

2004 – 2006 NEXTOR: Independent System Verification & Validation of Strategy Simulator (S2) Modules (Co-PI with George Donohue) $210,000.

2004 – 2005 Federal Aviation Administration: "Market Clearing Mechanisms to Alleviate Congestion at LaGuardia Airport" (PI with Michael Ball of Univ. of Maryland)

2003– 2004 Office of Naval Research: "Mathematical Optimization Methods for Design of the Army Unattended Ground Sensor" (Co-PI with Andrew Loerch)

2003 – 2006 National Science Foundation: "Air Transport Systems Engineering and Market Mechanisms" (Principal investigator is C.H. Chen.)

2002 – 2005 Office of Naval Research: "Advancing the Solvability of Combinatorial Optimization Problems" (Manfred Padberg is funded under this grant. I am Principal Investigator).

2000– 2002 Air Force Office of Scientific Research: "Real Time Scheduling And Routing"

1996 – 2000 Office of Naval Research: " Solving combinatorial optimization problems arising in strike-force planning". Joint research with M. W. Padberg. I am PI.

1995 Grumman Data Systems: "The use of optimization to evaluate computer hardware configurations"

1993 – 1995 Office of Naval Research: "Advances in solving large-scale combinatorial optimization problems" Joint research with M. W. Padberg. (three-year grant)

1992 – 1995 Office of Naval Research: `"Doctoral Research Funding in Combinatorial Optimization" AASERT Award which supports a doctoral student for three years of study and research.

1990 – 1992 Office of Naval Research: "Solution Procedures for Large-scale Combinatorial Optimization Problems" Joint research with M. W. Padberg. I am PI.

1990 – 1992 Air Force Office of Scientific Research and Office of Naval Research: "Solution Procedures for Large-scale Combinatorial Optimization Problems". Joint research with Manfred W. Padberg.

1989 – 1990 Center for Information Technology (CIT): "Using distributed processor to solve large compute-bound optimization problems", Joint research with Timothy Cannon, Stephen Nash, and Ariela Sofer. (one year grant)

1987 – 1990 National Science Foundation: Systems Theory and Operations Research, "Solving Large Discrete Optimization Problems Using Polyhedral Theory and Branch & Cut", Joint research with M. W. Padberg.

1987 – 1989 Office of Naval Research: "Polyhedral Theory and Scientific Computation for Solving Large Discrete Optimization Problems" Joint research with M. W. Padberg.

Editorial Activities:

2004 – present Editorial Board, *Interfaces*

2000 – present Editorial Board, *Annals of Operations Research*

2000 – 2009 Editorial Board*, Information Systems Frontiers*

1991 – 2008 Associate Editor, *Computational Optimization and Applications*

2002 – 2008 Editorial Board *Applied and Computational Mathematics*

1987 – 2008 Associate Editor, *Mathematical Programming, Series B*

1994 – 1998 Associate Editor, *SIAM Journal on Optimization*

1984 – 1997 Associate Editor, International *Abstracts of Operations Research*

1987 – 1992 Associate Editor, *ORSA Journal on Computing*

1987 Associate Editor, *Operations Research* special issue on Decision Support Systems

1978 – 1982 Founding Editor of the Newsletter of the Committee on Algorithms

of the Mathematical Programming Society

Professional Society Activities

2012	Member	Nominating Committee: Institute of Operations and the Management Sciences (INFORMS)
2009-2012	Vice President	International Federation of Operations Research Societies (IFORS) Board. Responsible for Meetings and Distinguished Lecture Series for the Society
2011-2014	Member	Program and organizing committees for the 2014 IFORS meeting in Barcelona, Spain
2009-2010	Member	INFORMS Strategic Planning Committee
2007 - 2008	Chair	INFORMS Special Committee to Review Office Management
2005-2006	Chair	INFORMS Women in OR Forum Prize for Advancement of Women
2007	Chair	Wye Woods Meeting on Congestion Management
2006	Chair	2007 Puerto Rico INFORMS Summer Meeting
2004 – 2006	Member	The INFORMS Publications Committee
2004	Member	INFORMS Nominating Committee
2004	Member	INFORMS Strategic Planning Committee
2002	Member	INFORMS Professional Recognition Committee
2002	Member	Committee for the International Mathematical Olympiad held at George Mason University
1999-present	Member	Organizing Committee for Practice Meeting for INFORMS
2000-2001	Member	Strategic Planning Committee of INFORMS
1999	Member	Council of Scientific Society Presidents
1995-1999	Exec Comm.	INFORMS
1998	President	Institute for Operations Research and the Management Sciences (INFORMS)

1997	Pres.-elect	INFORMS
1995-1996	Treasurer	INFORMS
1993-1994	Treasurer	Operations Research Society of America (ORSA)
1991-1994	Chair	ORSA/The Institute of Management Sciences (TIMS) Joint Finance Committee
1990-1993	Member	TIMS' Academic/Practitioner's Interface Committee
1991-1992	Member	1992 ORSA Practice Prize
1989-1991	Member	Conference Board on the Mathematical Sciences (TIMS' representative)
1989-1990	Co-chair	1989 Lanchester Prize Committee, ORSA Prize Committee to determine best-published paper in Operations Research during the years 1986-1988.
1985-1988	Council	The Mathematical Programming Society
1985-1988	Council	ORSA
1988	Chair	ad-hoc Committee on Practice, ORSA
1987-1990	Chair	Membership Committee, Mathematical Programming Society
1988	Associate Program Chair	ORSA/TIMS Spring General Meeting, DC
1987	Nominating Committee	ORSA
1982-1986	Chair	ORSA's Technical Section Committee
1985	Co-Director	ORSA Symposium on the Impact of Microcomputers on Operations Research
1984	Co-Director	NATO Advanced Study Institute on Computational Mathematical Programming

1982-1985	Chair	Committee on Algorithms of the Mathematical Programming Society
198l-1983	Reviewer	ORSA Literature for *Current Index in Statistics*
1981	Chair	ORSA's Computer Science Technical Section
1980	Member	ORSA's Nominating Committee
1980	Member	ORSA's Committee on Awards
1980	Vice Chair	ORSA's Computer Science Technical Section
1979	Sec/Treas.	ORSA's Computer Science Technical Section

University Committees

2009-2010	Member	Committee to evaluate a change of name for the engineering school. From "School of Information Technology" and Engineering to "College of Engineering"
2008	Member	University VP Research Search Committee
2007 - 2008	Member	Advisory Committee for the INFORMS National Meeting in Washington, D.C.
2007 - 2009	Director	GMU/Noblis Center for Network-based Systems
2005	Chair	Search Committee for Chair of ECE Department
2005	Member	Search Committee for Chair of Systems Engineering and Operations Research Department
2004	Chair	Review for Reappointment of Dean of School of Computational Science Review
2002	Chair	Search Committee for Chair of CEIE
2000	Member	Committee to Evaluate Dean of School of Management
1999	Member	Provost Search Committee
1997-1998	Member	Planning and Resource Management Committee
1997-1998	Member	Graduate Planning Council
1997	Member	President's Council

1996	Member	University Life Committee
1996	Member	Dean Search, School of Management
1996	Member	Long Range Planning Subcommittee of ACAC
1995-1996	Member	Faculty Research Oversight Committee
1995	Member	ACS Network Advisory Committee
1993	Member	Promotion and Tenure Committee for School of Management
1992	Member	Arts and Sciences Grievance Committee

Other Activities:

1996-2011	Treasurer	Parkinson Foundation of the National Capital Area

School-wide (ITE) Committees (served sometime while at GMU):

ITE Resource Allocation Committee
ITE Administrative Council
ITE Dean Search Committee
Promotion and Tenure Committee
Graduate Studies Committee
Grievance Committee
SITE Computing Committee

Department Committees (SEOR) (served sometime on each of these committees while at GMU):

Promotion and Tenure Committee
Recruitment and Hiring Committee
Library Committee
Graduate Studies Committee
Undergraduate Studies Committee

Service to the Community

2007-present	Treasurer	Parkinson Foundation of the National Capital Area

PUBLICATIONS

Books

Impacts of Microcomputers on Operations Research (co-edited with Saul Gass, Harvey Greenberg and Warren Langley) North Holland Press (1986)

Computational Mathematical Programming (co-edited with R. H. Jackson and J. Telgen) Mathematical Programming Study 31, North Holland Press (1987)

Refereed Publications

"A Successive Underestimation Method for Concave Minimization" (with James E. Falk) *Mathematics of Operations Research*, **1**,251-259 (1976)

"A Non-convex Max-Min Problem" (with James F. Falk). *Naval Research Logistics Quarterly* **24**, 44l-450 (1977).

"Methodology and Analysis for Comparing Discrete Linear L1 Approximation Codes" (with J. Gilsinn, R.H.F. Jackson, E. Leyendecker, P. Saunders, and D. Shier). *Communications in Statistics, Simulation and Computation* **B6**, 399-413 (1977).

"A Lexical Synthesis Approach to User-Oriented Input Specification" (with Christoph Witzgall). *Tools for Improved Computing in the 80's*: Proceedings of the l7th Technical Symposium of the Association of Computing Machinery. pp.179-185. ACM Publications. (1977)

"A Test Problem Generator for Discrete Linear L1 Approximation Problems" (with D.R. Shier) *ACM Transactions on Mathematical Software* (1980)

"A Method for Globally Minimizing Concave Functions Over Convex Sets", *Mathematical Programming* **20** 22-32 (1981).

"Documentation for a Model: A Hierarchical Approach"(with S.I.Gass, R.H.F. Jackson, L.S. Joel, and P.B. Saunders) *Computers and Operations Research* **24**, (1981).

"In Pursuit of a Methodology for Testing Mathematical Programming Software" (with R.H.F. Jackson). *Evaluating Mathematical Programming Techniques* (ed John M. Mulvey). Springer-Verlag Lecture Notes in Economics and Mathematical Systems, No. 199 (1982). (note: only weakly refereed)

"Estimating the parameters of a Queuing System" (co-authored with C.M. Harris). *European Journal of Operations Research* **27** 207-214 (1986).

"Evaluation and Modeling of the IRS Telephone Taxpayer Information System" (with C.M. Harris and P.B. Saunders). *Operations Research* **35** 504-523 (1987)

"LP-Based Combinatorial Problem Solving" (with M. Padberg) *Annals of Operations Research* **4** 145-194 (1986).

"Concave Minimization via Collapsing Polytopes" (with J. Falk). *Operations Research* **34**, 919-929, (1986)

"Comparison of Mathematical Programming Software: A Case Study Using Discrete L_1 Approximation Codes".(with P.D. Domich, R.H.F. Jackson, P.B. Saunders and D.R. Shier) *Computers and Operations Research* **14** 435-447 (1987)

"Operations Research: The Next Decade" (committee member, the Committee On the Next Decade in Operations Research) report published in *Operations Research*, OR Forum Section, **36** 619-637 (1988) (note: one of 30 authors)

"Large-scale 0-1 linear programming on distributed workstations" (with Timothy Cannon) *Annals of Operations Research* **22** 181-217 (1990).

"Locating Tax Facilities: A Graphics-Based Microcomputer Optimization Model" (with P. D. Domich, R. H. F. Jackson, and M. McLain *Management Science* **37** 960-979 (1991)

"Improving LP-representations of Zero-one Linear Programs for Branch-and-Cut" (with Manfred Padberg) ORSA *Journal on Computing* **3** 121-134 (1991)

"Solving large-scale crew-scheduling arising in the airline industry" (with Manfred Padberg) *Management Science* **39** 657-682 (1993).

"Solving Latin-cube Sampling Problems using the Multi-dimensional Generalized Assignment Problem" (with C. Harris and L. Yarrow). *European Journal of Operations Research* (1994)

"An integer-programming approach to solving a latin-hypercube sampling problem" (with C. Harris and L. Yarrow) *O.R. Spektrum* (1995).

"Bestimmung optimaler Einsatzplane fur Flugpersonal" (with Manfred Padberg) in *Mathematics in der Praxis,* eds A. Bachem, M. Junger and R. Schrader. Springer Press.(1996)

"Integer and Combinatorial Programming" (with Manfred Padberg) *Encyclopedia of Operations Research* 76-83 (1996)

"The Traveling Salesman Problem" (with Manfred Padberg) *Encyclopedia of Operations Research* 76-83 (1996)

"Set-covering, packing and partitioning problems" (with Manfred Padberg) *Encyclopedia of Optimization* (2000)

"Combinatorial Optimization: History and Future Challenges", *Journal of Applied and Computational Mathematics,* **124** (2000) 341-360.

"A column generation and branch-and-cut approach to the bandwidth packing problem"

(with Christine Villa) submitted to the *NIST Journal of Research* to appear in a special issue honoring Christoph Witzgall (expected publication date: First quarter, 2006).

"Observations and Near-Direct Implementations of the Ascending Proxy Auction" (with D. Menon, S. VandenHeever, and T. Wilson) to appear as Chapter 17 in *Combinatorial Auctions* MIT Press (publication date: December, 2005).

"Auctions for the Safe, Efficient and Equitable Allocation of Airspace System Resources" (with M. Ball and G. Donohue) to appear as Chapter 20 in *Combinatorial Auctions* MIT (expected publication date: December, 2005).

"Testing Linear Pricing Algorithms for use in Ascending Combinatorial Auctions" (with M. Dunford, D. Menon, R. Sultana, and T. Wilson) submitted to *INFORMS Journal of Computing* (2005)

"The Dance of the Thirty Ton Trucks: Dispatching and Scheduling in a Dynamic Environment" (with Martin Durbin) 2008. *Operations Research* 56, 1 , 3-19.

"Analysis of Air Transportation for the New York Metroplex" (2008) with Lingyu Wang, George Donohue, Lance Sherry, Rosa Oseguera-Lohr. *International Conference on Research in Air Transportation* (ICRAT 2008) (lightly referreed)

"A Package Bidding Tool for the FCC Auctions" (with Dinesh Menon, Surett Van derHeever) Invited?: *Telecommunications Modeling, Policy, and Technology* **9** pp153-189. Springer-Verlag OR/ CS Interface Series

"Observations and Near-Direct Implementatiion of the Ascending Proxy Auction" with D. Menon, S. van DenHeever. Chapter 17 *Combinatorial Auctions* eds. Cramton, Shoham and Steinberg. MIT Press (2005)

"Auctions for the Safe, Efficient and Equitable Allocation of Airspace System Resources" with M. Ball and G. Donohue. Chapter 20, *Combinatorial Auctions* eds Cramton, Shoham and Steinberg. MIT Press (2005)

"Choosing a Combinatorial Auction Design An Illustrated Example" *Perspectives in Operations Research* eds F. Alt, M. Fu and B. Golden. Operations Research and Computer Science Interfaces Series, **36,** Springer Press, 153-177, 2006.

"Optimum Airport Capacity Utilization under Congestion Management at NY LaGuardia Airport," with L. Le, G.L. Donohue, C. H. Chen *Planning and Technology Journal,* **31**, No. 1, 93-112 (2007).

"A package bidding tool for the FCC's spectrum auctions, and its effect on auction outcomes" with D. Menon and S.van den Heever Chapter 8 of *Telecommunications Modeling, Policy and Technology* S. Raghavan, B. Golden and E. Wasil eds. Springer pp 153-190. (2008)

"Effects of Fuel Prices on Air Transportation Performance at New York and San Francisco Airports" with J. Ferguson, L. Sherry, A. Kara and G. Calderon. 2009 ICNS Conference, Washington, D.C., May 2009.

"Effects of Fuel Prices and Slot Controls on Air Transportation Market Price Elasticity Curves." With J. Ferguson, A. Kara. *Proceedings 9th AIAA Aviation Technology, Integration, and Operations Conference* (ATIO) , September 2009.

"A Congestion Pricing Model to Handle 'Day of Operations' Airport Capacity Reductions, with A. Kara, F. Berardino, and J. Ferguson. *9th AIAA Aviation Technology, Integration, and Operations Conference* (ATIO), September 2009.

"A Practical Combinatorial Clock Exchange for Spectrum Licenses" with D. Menon. *Decision Analysis,* **7**(1). 1-21. 2010

"Spectrum Auctions" in *Wireless Network Design: Optimization Models and Solution Procedures (International Series in Operations Research & Management Science)* eds. Jeffrey Kennington, Eli Olinick and Dinesh Rajan. Fall, 2010. Springer Verlag.

"Estimating Domestic U.S. Airline Cost of Delay Based on European" with A. Kara, J. Ferguson, and L. Sherry. *Proceeding of the ICRAT 4th International Conference on Research in Air Transportation*. June 01-04, 2010 — Budapest, Hungary. (A. Kara won Best Student Paper award for this paper and accompanying presentation).

"Congestion Pricing Applications to Manage High Temporal Demand for Public Service and Their Relevance to Air Space Management" with F. Berardino, and G. Hunter to appear in *Network and Spatial Economics*. 2011.

"Combinatorial Auctions: Theory and Applications" to appear in *Encyclopedia of Operations Research and Management Sciences.* Eds. Saul Gass and Michael Fu. Kluwer Academic Publishers. 2012.

"The Traveling Salesman Problem" with M. Padberg and G. Rinaldi to appear in *Encyclopedia of Operations Research and Management Sciences.* Eds. Saul Gass and Michael Fu. Kluwer Academic Publishers. 2012.

K. L. Hoffman "Integer and Combinatorial Optimization with T. Ralphs to appear in *Encyclopedia of Operations Research and Management Science*, 2012.

Technical Reports:

"Determining Aircraft Altitude by Multilateration: An Error Analysis. (with Judith F. Gilsinn) National Bureau of Standards Technical Report for the Federal Aviation Administration (1978).

"Resource Requirement and Allocations in IRS' Audit Division" (with Lambert S. Joel and Martin H. Pearl). National Bureau of Standards Technical Report NBSIR 79-l7ll2, NIST, Gaithersburg, MD 20899 (1979).

"Interim Report on Model Assessment Methodology: Documentation Assessment" (with Saul I. Gass, Richard H.F. Jackson, Lambert S. Joel,and Patsy B. Saunders). National Bureau of Standards Technical Report NBSIR 80-197l, NIST, Gaithersburg, MD 20899 (1980).

"Probabilities of Vertical Overlap: A Sensitivity Analysis" (with Howard K. Hung and Judith F. Gilsinn).National Bureau of Standards Technical Report NBSIR 80-1990, NIST, Gaithersburg, MD 20899 (1980).

"Methods for Model Evaluation (with Richard H. F. Jackson). *The Application of Systems Science to National Energy Policy Planning* a NATO Advanced Research Institute Publication (1980).

"An Annotated Restatement of the Midterm Oil and Gas Supply Modeling System Methodology" (with Lambert S. Joel). National Bureau of Standards Technical Report NBSIR 80-2044. NIST, Gaithersburg, MD 20899 (1980).

"The NBS Energy Model Assessment Project: Summary and Overview". (with S. I. Gass, R.H.F.Jackson, L.S. Joel, and P.B. Saunders) National Bureau of Standards Technical Report NBSIR 80-2128. NIST, Gaithersburg, MD 20899 (1980).

"Evaluation of L1 Codes Using Polynomial Approximation Problems" (with P.D. Domich, R.H. F. Jackson, P.B. Saunders, and D.R. Shier).Technical Report NBSIR-81-2428. NIST, Gaithersburg, MD 20899 (1981)

"Evaluation of the IRS Telephone Information System: Simulation and Analysis" (with Patsy B. Saunders). National Bureau of Standards Technical Report NBSIR 8l-2198. NIST, Gaithersburg, MD 20899 (1980).

"Methods for Model Evaluation" (with R.H.F. Jackson) *Energy Policy Planning* (ed Bayraktar, Cherniavski, Laugton and Ruft) NATO Conference Series, Series II: Systems Science (198l).

"Testing Mathematical Programming Software: Progress and Problems" (with R.H.F. Jackson). National Bureau of Standards NBSIR 82-2245. NIST, Gaithersburg, MD 20899 (1982).

"LP-Based Combinatorial Problem Solving (with M. Padberg). *Computational Mathematical Programming* ed. Klaus Schittkowski. Springer-Verlag (1984).

"The Facility Location Problem: An Interactive Graphics-Based Approach" (with P. D. Domich, R. H. F. Jackson and M. Mc Lain). National Bureau of Standards Technical Report NBS-IR 86-3482. NIST, Gaithersburg, MD 20899(1986).

"Using the Smoothed anchoring method to obtain current price estimates" (with M. Dunford, M. Durbin, D. Menon, and R. Sultanta) in Public Notice (DA 02-260) FCC 2002 Attachments B 1-7.

"Auction of Licenses in the 747-762 and 777-792 Bands, Round Results Process and Results Replication" (with M. Dunford, D. Menon, and R. Sultana) in Public Notice (DA 02-995) pp 1-15. 2002

"A Package Bidding Tool for the FCC's Spectrum Auctions, and its Effect on Auction

Outcomes" with (Dinesh Menon, and Susara A. van den Heever) Technical Report. 2005

"Testing Linear Pricing Algorithms for use in Ascending Combinatorial Auctions" (with M. Dunford, D. Menon, R. Sultana, and T. Wilson) submitted to *INFORMS Journal of Computing* (2005)

"Evidence that Pricing Works" (with George Donohue) Reason Foundation Policy Brief. **67**, 1-8. Reason Foundation. 11/15/2008.

"Effects of Fuel Prices and Slot Controls on Air Transportation at New York Airports" with J. Ferguson, L. Sherry, A.Q. Cara, and G. Calderon-Meza. 8th USA/Europe Seminar on Air Traffic Management R&D. (FAA and Euro Control Organizations, Napa CA) 2009

"Testing Linear Pricing Algorithms for use in Ascending Combinatorial Auctions" with M. Dunford, D. Menon, R. Sultana and T. Wilson. Technical Report.

"Sensitivity Analysis to the Cost of Delay Model for NextGen Benefits Analysi" with J. Ferguson, A.Q. Kara and L. Sherry. 2010 Integrated Communications Navigation and Surveillance Conference. IEEE (5/12/2010)

"Using an Equilibrium Model to Forecast Airline Behavior in Response to Economic and Regulatory Changes" With J. Ferguson, A.Q. Kara, and L. Sherry (5/11/2011) 5th Integrated Communications Navigation and Surveillance Conference. IEEE.

"Optimizing the Air Transportation Service to Metroplex Airports, Part I: Analysis of Historical Data" with L. Sherry, J. Ferguson, and A.Q. Kara. Report to NASA (NASA/CR 2010-216861) 60 pages.

"Optimizing the Air Transportation Service to Metroplex Airports, Part II: Analysis using the airline schedule optimization model (ASOM) " with L. Sherry, J. Ferguson, and A.Q. Kara. Report to NASA (NASA/CR 2010-216862). 80 pages.