Rachel A. Davidson

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EDUCATION

7/94 – 6/97 **Stanford University**, Stanford, CA, Ph.D., Civil Engineering

9/93 – 6/94 **Stanford University**, Stanford, CA, M.S., Civil Engineering

9/89 – 6/93 **Princeton University**, Princeton, NJ, B.S.E., Civil Engineering
Summa Cum Laude

PROFESSIONAL EXPERIENCE

8/07 – present **Associate Professor**
Department of Civil and Environmental Engineering, University of Delaware, Newark, DE.

7/06 – 8/07 **Visiting Assistant Professor**
Department of Civil Engineering and Engineering Mechanics, Columbia University, New York, NY.

7/00 – 8/07 **Assistant Professor**
School of Civil and Environmental Engineering, Cornell University, Ithaca, NY.

8/98 – 6/00 **Assistant Professor**
Department of Civil Engineering, University of North Carolina at Charlotte, Charlotte, NC.

9/97 – 8/98 **Post-Doctoral Research Associate**
School of Engineering, Stanford University, Stanford, CA.

6/94 – 9/94 **Summer Intern**
Risk Management Solutions, Inc., Menlo Park, CA.

9/93 – 6/97 **Research Assistant**
Department of Civil Engineering, Stanford University, Stanford, CA.

HONORS AND AWARDS

- Best paper award, Society for Risk Analysis, *Risk Analysis* journal (2007)
- Nominated for Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers (2006)
- Chosen as Most Influential Faculty Member by a Merrill Presidential Scholar, Cornell University (2005)
- Dorothy G. Swanson Excellence in Teaching Award from Cornell University College of Engineering (2004)
- Invited participant in the National Academy of Engineering Seventh Annual Symposium on Frontiers of Engineering, Irvine, CA (3/02)

- National Science Foundation Faculty Early Career Development (CAREER) award (7/00-6/04)
- National Science Foundation Professional Opportunities for Women in Research and Education (POWRE) award (7/00-12/01)
- National Science Foundation Three-Year Graduate Fellowship (9/93-6/97)
- Earthquake Engineering Research Institute Student Paper Competition winner (1997)
- Tau Beta Pi (1991), Phi Beta Kappa (1993), Sigma Xi (1993), Phi Beta Delta (1998)

MEMBERSHIP ON BOARDS, PANELS, AND IN PROFESSIONAL SOCIETIES

- Councilor, Society for Risk Analysis (2004-2006)
- Member, National Research Council, Board on Infrastructure and the Constructed Environment (12/02-9/05)
- Secretary, Engineers for a Sustainable World (National org.) Board of Directors (2004-present)
- Federal Emergency Management Agency (FEMA) Emergency Management Higher Education Project. Focus group participant to help with development of a Hazards Risk Assessment College Course (9/00).
- Member, American Society of Civil Engineers (ASCE)
- Member, Earthquake Engineering Research Institute (EERI)
- Member, Consortium of Universities for Research in Earthquake Engineering (CUREE)

PUBLICATIONS

A. Peer-Reviewed Journal Papers

1. Han, S., S.D. Guikema, S.M. Quiring, K. Lee, D. Rosowsky, and R.A. Davidson. Estimating the Spatial Distribution of Power Outages during Hurricanes in the Gulf Coast Region. Reliab Engng and Syst Safety 2008a; in press. (available online).
2. Liu, H., Davidson, R., and Apanasovich, T. 2007. Spatial Generalized Linear Mixed Models of Electric Power Outages due to Hurricanes and Ice Storms. *Reliability Engineering and System Safety*, in press (available online).
3. Liu, H., Davidson, R., and Apanasovich, T. Statistical forecasting of electric power restoration times in hurricanes and ice storms. *IEEE Transactions on Power Systems* 22(4), 2270-2279.
4. Çağnan, Z., and Davidson, R. 2007. Discrete event simulation of the post-earthquake restoration process for electric power systems. *International Journal of Risk Assessment and Management* 7(8), 1138-1156.
5. Xu, N., Guikema, S., Davidson, R., Nozick, L., Çağnan, Z., and Vaziri, K. 2007. Optimizing scheduling of post-earthquake electric power restoration tasks. *Earthquake Engineering and Structural Dynamics, Special Issue: Electric Power* 36(2), 265-284.
6. Xu, N., Davidson, R., Nozick, L., and Dodo, A. 2007. The risk-return tradeoff in optimizing regional earthquake mitigation investment. *Structure and Infrastructure Engineering* 3(2), 133-146.

7. Jain, V., and Davidson, R. 2007. Application of a regional hurricane wind risk forecasting model for wood-frame houses. *Risk Analysis* 27(1), 45-58. Winner of Best Paper Award, Society for Risk Analysis.
8. Jain, V., and Davidson, R. 2007. Forecasting changes in the hurricane wind vulnerability of a building inventory. *Journal of Infrastructure Systems* 13(1), 1-12.
9. Dodo, A., Davidson, R., Xu, N., and Nozick, L. 2007. Application of regional earthquake mitigation optimization. *Computers and Operations Research* 34(8), 2478-2494.
10. Çağnan, Z., Davidson, R., and Guikema, S. 2006. Post-earthquake restoration planning for Los Angeles electric power. *Earthquake Spectra* 22(3), 1-20.
11. Guikema, S., Davidson, R., and Liu, H. 2006. Statistical models of the effects of tree trimming on power system reliability. *IEEE Transactions on Power Delivery* 21(3), 1549-1557.
12. Davidson, R., Lembo, Jr., A., Ma, J. Nozick, L., and O'Rourke, T. 2006. Optimization of investments in natural gas distribution networks. *Journal of Energy Engineering* 132(2), 1-9.
13. Liu, H., Davidson, R. Rosowsky, D. and Stedinger, J. 2005. Negative binomial regression of electric power outages in hurricanes. *Journal of Infrastructure Systems* 11(4), 258-267.
14. Dodo, A., Xu, N. Davidson, R. and Nozick, L. 2005. Optimizing regional earthquake mitigation investment strategies. *Earthquake Spectra* 21(2), 305-327.
15. (Kumar) Jain, V., Davidson, R., and Rosowsky, D. 2005. Modeling changes in hurricane risk over time. *Natural Hazards Review* 6(2), 88-96.
16. Lembo, A., Davidson, R., Nozick, L., O'Rourke, T. 2003. Computing distance to nearest utility: As the crow flies vs. As the gas flows. *Cartography and Geographic Information Science* 30(4), 335-342.
17. Davidson, R., and Rivera, M. 2003. Projecting changes in the Carolina building inventory and their effect on hurricane risk. *Journal of Urban Planning and Development* 129(4), 211-230.
18. Davidson, R., Zhao, H., and Kumar, V. 2003. A quantitative model to forecast changes in the hurricane vulnerability of a regional building inventory. *Journal of Infrastructure Systems* 9(2), 55-64.
19. Davidson, R., Liu, H. Sarpong, I. Sparks, P., and Rosowsky, D. 2003. Electric power distribution system performance in Carolina hurricanes. *Natural Hazards Review* 4(1), 36-45.
20. Davidson, R., and Lambert, K. 2001. Comparing the hurricane disaster risk of coastal counties in the U.S. *Natural Hazards Review* 3(3), 132-142.
21. Davidson, R., Gupta, A., Kakhandiki, A., and Shah, H. 1997. Urban earthquake disaster risk assessment and management. *Journal of Seismology and Earthquake Engineering* 1(1), 59-70.
22. Davidson, R. 1997. A multidisciplinary Urban Earthquake Disaster Risk Index. *Earthquake Spectra* 13(2), 211-223.

B. Peer-Reviewed Conference Proceedings

1. Lee, S., and Davidson, R. Simulation-based model of fire following earthquake. *Proc., 8th U.S. National Conf. on Earthquake Engineering in San Francisco, CA, April 18 - 22, 2006.*
2. Guikema, S., Xu, N. Davidson, R., Nozick, L., and Çağnan, Z. Optimization of crews in post-earthquake electric power restoration. *Proc., 8th U.S. National Conf. on Earthquake Engineering in San Francisco, CA, April 18 - 22, 2006.*
3. Guikema, S., and Davidson, R. 2004. Ridge regression and genetic algorithms for efficient simulation-based integer optimization. *Winter Simulation Conf. '04, Washington, DC, December 5-8, 2004.*
4. Davidson, R. 1998. Evaluation and use of the Earthquake Disaster Risk Index. *Proc., Sixth U.S. National Conf. on Earthquake Engineering, Seattle, WA, May 31-June 4, 1998*, paper 119.

C. Reports and Book Chapters

1. Davidson, R., Liu, H., and Apansovich, T. 2008. "Estimation of Post-Storm Restoration Times for Electric Power Distribution Systems." *Advances in Electric Power and Energy; Power Systems Engineering*, IEEE book series, in press.
2. Davidson, R. 2008. *Generalized Linear (Mixed) Models of Post-earthquake Fire Ignitions*. MCEER technical report, Buffalo, NY, in press.
3. Tabucchi, T., and Davidson, R. 2008a. *Post-Earthquake Restoration of the Los Angeles Water Supply System*. MCEER technical report, MCEER-08-0008, Buffalo, NY.
4. Davidson, R., and Çağnan. Z. 2004. "Restoration Modeling of Lifeline Systems." *Research Progress and Accomplishments 2003-2004*, Multidisciplinary Center for Earthquake Engineering Research.
5. Cardona, C., Davidson, R., and Villacis, C. 1999. Understanding urban seismic risk around the world. In *Natural Disaster Management*, official commemorative volume for the International Decade for Natural Disaster Reduction (IDNDR), ed. Jon Ingleton. Leicester, England: NDM.

D. Other Conference Proceedings

1. Davidson, R. 2008. Generalized linear (mixed) models of post-earthquake fire ignitions. *Proc., 14th World Conference on Earthquake Engineering*, October 12-17, 2008, Beijing, in press.
2. Lee, S., and Davidson, R. 2008. A simulation-based model of post-earthquake fire spread. *Proc., 14th World Conference on Earthquake Engineering*, October 12-17, 2008, Beijing, in press.
3. Tabucchi, R., and Davidson, R. 2008b. Post-Earthquake Restoration Model for the Los Angeles Water Supply System. *Proc., 14th World Conference on Earthquake Engineering*, October 12-17, 2008, Beijing, in press.

4. van de Lindt, J., Filiatraut, A., Symans, M., Rosowsky, D., and Davidson, R. Towards a performance-based seismic design philosophy for woodframe construction," *Proc., 9th Canadian Conference on Earthquake Engineering, Ottawa, Ontario, June 27-29, 2007*.
5. Guikema, S., and Davidson, R. 2006. Modelling critical infrastructure reliability with Generalized Linear (Mixed) Models, *Proc., 8th International Conference on Probabilistic Safety Assessment and Management, New Orleans, May 14-19, 2006*.
6. van de Lindt, J., Rosowsky, D., Filiatraut, A., Symans, M., and Davidson, R. 2006. Development of a performance-based seismic design philosophy for mid-rise woodframe construction: Progress on the NEESWood project. *Proc., World Conference on Timber Engineering in Portland, OR, August 6-10, 2006*.
7. Davidson, R., Nozick, L., Dodo, A., and Xu, N. 2005. Equity in regional earthquake mitigation investment. *Symposium on Risk Modeling and Loss Reduction Strategies for Natural and Technological Hazards,* Part of *Ninth International Conference on Structural Safety and Reliability – ICOSSAR'05, Rome, Italy, June 19-23, 2005*.
8. Çağnan, Z., and Davidson, R. 2004. Post-earthquake restoration modeling of electric power systems. *Proc., 13th World Conference on Earthquake Engineering in Vancouver, BC, Canada, August 1-6, 2004*, paper no. 109.
9. Dodo, A., Xu, N. Davidson, R., and Nozick, L. 2004. Optimizing the selection of regional earthquake mitigation strategies. *Proc., 13th World Conference on Earthquake Engineering, Vancouver, BC, Canada, August 1-6, 2004*, paper no. 269.
10. Davidson, R., and Lambert, K. 2001. Comparative assessment of the hurricane disaster risk of coastal counties in the U.S. *Proc., Americas Conference on Wind Engineering–2001, Clemson, SC, June 3-6, 2001*.
11. Rivera, M., Davidson, R., and Zhao, H. 2001. Forecasting the effect of changes in building inventory and vulnerability on hurricane risk in the U.S. *Proc., Americas Conference on Wind Engineering–2001, Clemson, SC, June 3-6, 2001*.
12. Sarpong, I., Davidson, R. Sparks, P. Rosowsky, D., and Shaik, B. 2001. Performance of electric power distribution systems in recent hurricanes. *Proc., Americas Conference on Wind Engineering–2001, Clemson, SC, June 3-6, 2001*.
13. Cardona, C., Villacis, C., and Davidson, R. 2001. A project to study urban earthquake risk worldwide. *Proc., Fourth International conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics and Symposium in Honor of Professor W.D. Liam Finn, San Diego, CA, March 26-31, 2001*.
14. Davidson, R., Villacis, C., Cardona, C., and Tucker, B. 2000. A project to study urban earthquake risk worldwide. *Proc., Twelfth World Conference on Earthquake Engineering, Auckland, New Zealand, Jan. 30-Feb. 4, 2000*, paper no. 791.
15. Davidson, R. 1999. Indirect assessment of the earthquake vulnerability of a city's physical infrastructure. *Proc., Eighth Canadian Conference on Earthquake Engineering, Vancouver, British Columbia, June 13-16, 1999*, paper CAEE-172.

16. Davidson, R. 1998. Innovation in earthquake risk assessment. *Proc., First International Conference on Computer Simulation in Risk Analysis and Hazard Mitigation (Risk Analysis 98), Valencia, Spain, Oct. 6-8, 1998*.
17. Davidson, R. and Shah, H. 1997. Risk classification of megacities. *Proc., First International Workshop on Earthquakes and Mega-cities, Frankfurt, Germany, September 1-4, 1997*, organized jointly by 17 professional organizations from Europe and the USA, including the IDNDR Secretariat, IAEE, IASPEI, UNESCO, UNCRD, UNU, USGS, and WSSI. Invited paper.
18. Davidson, R., Gupta, A. Kakhandiki, A. 1996. The critical problem of urban earthquake disaster risk assessment and management. *Proc., ISET Symposium on Earthquake Effects on Structures, Plants & Machinery, Nov. 13-15, 1996, Hotel Ashoka, New Delhi, India*.
19. Davidson, R., and Shah, H. 1996. Earthquake disaster risk: A critical problem for the world's urban regions. *Proc., Pan-Pacific Hazards '96 Conference, Vancouver, Canada, July 29-Aug. 2, 1996*.
20. Davidson, R. 1996. Development of a multidisciplinary urban earthquake disaster risk index. *Proc., Eleventh World Conference on Earthquake Engineering, Acapulco, Mexico, June 23-28, 1996*, paper no. 1927.
21. Wang, F., Windeler, Jr., D., Mortgat, C., Boley, J., and Davidson, R. 1996. Seismic hazard analysis in New Zealand. *Proc., Eleventh World Conference on Earthquake Engineering, Acapulco, Mexico, June 23-28, 1996*, paper no. 886.
22. Wang, F., Davidson, R., and Bendimerad, F. 1995. Attenuation of intensity with epicentral distance in Jamaica. *Proc., Fifth International Conference on Seismic Zonation, Nice, France, Oct. 17, 1995*, 1197-1204.
23. Çakmak, A., Davidson, R., Mullen, C., and Erdik, M. 1993. Dynamic analysis and earthquake response of Hagia Sophia. *Proc*., *Sixth International Conference on Soil Dynamics and Earthquake Engineering*, 881-898.
24. Mark, R., Çakmak, A., Hill, K., and Davidson, R. 1993. Structural analysis of Hagia Sophia: A historical perspective. *Proc*., *Sixth International Conference on Soil Dynamics and Earthquake Engineering*, 867-880.

PRESENTATIONS AND WORKSHOP PLANNING

A. Invited research presentations

1. Davidson, R. "Lifeline restoration modeling: Measuring, understanding, and improving rapidity," Multidisciplinary Center for Earthquake Engineering Research (MCEER) National Science Foundation Site Visit, Buffalo, NY, October 2006.
2. Davidson, R., Nozick, L., Dodo, A., and Xu, N. "Equity in regional earthquake mitigation investment," *Symposium on Risk Modeling and Loss Reduction Strategies for Natural and Technological Hazards,* Part of *Ninth International Conference on Structural Safety and Reliability – ICOSSAR'05, Rome, Italy, June 19-23, 2005*.

3. Davidson, R., and Çağnan, Z. "Post-earthquake restoration modeling," Multidisciplinary Center for Earthquake Engineering Research (MCEER) National Science Foundation Site Visit, Buffalo, NY, June 2004.
4. Davidson, R. "Earthquake risk around the world," *Bridging the Divide: EWF-USA National Conference*, Cornell University, Ithaca, NY, September 17-20, 2003.
5. Davidson, R., Stedinger, J., Liu, H., and Rosowsky, D. "Modeling electric power distribution system outages in hurricanes," Southeastern Electric Exchange meeting, San Destin, FL, March 17, 2003.
6. Davidson, R., Stedinger, J., Liu, H., and Rosowsky, D. "Modeling electric power distribution system outages in hurricanes," Edison Electric Institute Mutual Assistance Conference, Houston, TX, February 5-7, 2003.
7. Davidson, R., Rosowsky, D., Rivera, M., Zhao, H., and Huang, K. "Modeling the change in hurricane losses over time," *27th Annual Hazards Research and Applications Workshop, Boulder, CO, July 2002*.
8. Davidson, R., Liu, H., Sarpong, I., Rosowsky, D., and Sparks, P. "Hurricane vulnerability of electric power distribution systems in the Carolinas," *United States-New Zealand Workshop on Civil Infrastructure Systems: Management of Civil Infrastructure Systems in Multihazard Environments, Christchurch, New Zealand, October, 2001*. Sponsored by the National Science Foundation and various governmental/non-governmental agencies in New Zealand.
9. Davidson, R. "Development, Application, and Extension of the Earthquake Disaster Risk Index (EDRI), Cornell University Council 50th Annual Meeting, Cornell University, Ithaca, NY, October 26, 2000.
10. Davidson, R., and Lambert, K. "A Hurricane Disaster Risk Index," Expert Meeting on Vulnerability and Risk Analysis and Indexing, Geneva, Switzerland, September 2000. Sponsored by the United Nations Development Programme (UNDP) Emergency Response Division, Disaster Reduction and Recovery Programme.
11. Davidson, R., Villacis, C., Cardona, C., and Tucker, B. "Understanding urban seismic risk around the world project," *Vulnerability Assessment Techniques Workshop, Charleston, SC, March 2000*. Sponsored by the Organization of American States, Unit for Sustainable Development and Environment (OAS-USDE) and the U.S. National Oceanic and Atmospheric Administration Coastal Services Center (NOAA-CSC).
12. Davidson, R. and Shah, H. 1997. Risk classification of megacities. *Proc., First International Workshop on Earthquakes and Mega-cities, Frankfurt, Germany, September 1-4, 1997*, organized jointly by 17 professional organizations from Europe and the USA, including the IDNDR Secretariat, IAEE, IASPEI, UNESCO, UNCRD, UNU, USGS, and WSSI.
13. Davidson, R. "A multidisciplinary urban Earthquake Disaster Risk Index," *Earthquake Engineering Research Institute Annual Meeting, Austin, Texas, February 1997*. Presented as the Student Paper Competition winner.

14. Davidson, R., and Gupta, A. "An integrated approach to earthquake disaster risk assessment and management," *United Nations University/World Seismic Safety Initiative Workshop on Urban Earthquake Disaster Mitigation, Tokyo, Japan, September 1995*.

B. Other invited presentations

1. Davidson, R. "A Review of 'HAZUS Development and Current Applications for Catastrophic Planning' by T. Durham with P. Johari, and D. Bausch." *Workshop on Strategic Directions for (Seismic) Risk Modeling and Decision Support, Boulder, CO, July 14-15, 2006*.
2. Davidson, R. "Engineers for a Sustainable World: A new sustainability initiative," Merrill Presidential Scholars Faculty Panel, Cornell University, May 25, 2005.
3. Davidson, R. "Engineers for a Sustainable World: Engaging engineers in reducing poverty and promoting sustainability worldwide," University of Rochester, February 28, 2005.
4. Davidson, R. "Engineers for a Sustainable World," Bovay Program in Engineering Ethics, Cornell University, September 24, 2004.
5. Davidson, R., Warhaft, Z., and Clewlow, R. "Engineers Without Frontiers and Cornell," Engineering College Council meeting, Cornell University, Ithaca, NY, April 15, 2004.

C. Other presentations and workshop planning

1. Liu, H., Davidson, R., and Apanasovich, T. "Assessing the risk of electric power outages due to hurricanes and ice storms using spatial Generalized Linear Mixed Models," *Society for Risk Analysis Annual Meeting, Baltimore, MD, December 3-6, 2006*. [Abstract accepted]
2. (Kumar) Jain, V., and Davidson, R. "Projecting changes in the hurricane risk of residential wood frame structures in North Carolina." *Proc., 10th American Conference on Wind Engineering, Baton Rouge, LA, May 31-June 4, 2005*.
3. Davidson, R., Ma, J., Nozick, L., O'Rourke, T., and Lembo, Jr., A. "Decision support for managed network expansion of gas services," *CORS/INFORMS Joint International Meeting, Banff, Alberta, Canada, May 16-19, 2004*.
4. Cagnan, Z., and Davidson, R. "Post-earthquake lifeline service restoration modeling," *Technical Conference on Lifeline Earthquake Engineering (TCLEE), Long Beach, CA, August 10-13, 2003*.
5. Davidson, R., and Kumar, V. "Regional hurricane assessment for a dynamic built environment," *Society for Risk Analysis Annual Meeting, Palm Springs, CA, Dec. 2004*.
6. Liu, H., Davidson, R., and Rosowsky, D. "A model to estimate expected hurricane-related outages in electric power systems in the Carolinas," *Society for Risk Analysis Annual Meeting, New Orleans, LA, December 2002*.
7. Davidson, R., Rivera, M., and Zhao, H. "Modeling the effect of building inventory and vulnerability changes on the evolution of hurricane risk in the Carolinas," *Solutions to Coastal Disasters Conference, San Diego, CA, February 2002*.

9. International Workshop for an Earthquake Safer World in the 21st Century, Kobe, Japan, 1/01. Organized by the United Nations Centre for Regional Development (UNCRD) Disaster Management Planning Hyogo Office. In Collaboration with the UN Secretariat for the International Decade for Natural Disaster Reduction (IDNDR) RADIUS Japan Team, GeoHazards International, Hyogo Prefecture, Kobe City, and the Yomiuri Shinbun. Helped plan and lead.
10. Davidson, R. "UUSRAW risk assessment methodology: The Earthquake Disaster Risk Index," *Risk Assessment Tools for Diagnosis of Urban Areas against Seismic Disasters (RADIUS) Project Final Meeting, Tijuana, Mexico, October 1999*. Sponsored by the United Nations International Decade for Natural Disaster Reduction Secretariat.
11. Megacities and Earthquake Risk, a White House conference, Washington, DC, 1/98. Helped to organize 3rd of 14 forums in Toward Natural Disaster Resistant Communities in the 21st Century series, sponsored by the Subcommittee on Natural Disaster Reduction.
12. Davidson, R. "A multidisciplinary urban Earthquake Disaster Risk Index," *The 28th International Geographical Congress, The Hague, The Netherlands, August 1996*.

RESEARCH FUNDING

Title: DRU: Integrated optimization of evacuation and mass care sheltering for hurricanes
Sponsor: National Science Foundation
PI: Rachel Davidson; *Co-PI*: Tricia Wachtendorf, Linda Nozick
Period: 8/08 to 7/11
Amount: $750,000

Title: Methods for Measuring, Monitoring and Evaluating Post-Disaster Recovery
Sponsor: National Science Foundation
PI: Ronald Eguchi; *Co-PI*: Rachel Davidson, Beverley Adams, Stephanie Chang, Arleen Hill
Period: 9/08 to 8/10
Amount: about $300,000

Title: Investment Planning for Regional Natural Disaster Mitigation
Sponsor: National Science Foundation
PI: Rachel Davidson; *Co-PI*: Linda Nozick
Period: 7/06 to 6/09
Amount: $250,000

Title: NEES-SG. NEESWood: Development of a Performance-Based Seismic Design Philosophy for Mid-Rise Woodframe Construction
Sponsor: National Science Foundation, Network for Earthquake Engineering Simulation (NEES) Program
PI: John van de Lindt; *Co-PIs*: Rachel Davidson, Andre Filiatrault, David Rosowsky, Michael Symans
Period: 10/05 to 9/09
Amount: $1,240,000 (about $109,000 to Davidson)

Title: Water Supply Restoration and Fire Modeling
Sponsor: Multidisciplinary Center for Earthquake Engineering Research

PI: Rachel Davidson
Period: 10/06 to 9/07
Amount: $65,000

Title: Storm Preparedness and Recovery for the Electric Power System
Sponsor: National Science Foundation
PI: Rachel Davidson; *Co-PIs*: Art DeGaetano, David Rosowsky
Period: 7/04 to 6/07
Amount: $380,024

Title: Lifeline Restoration and Fire Modeling for Disaster Response
Sponsor: Multidisciplinary Center for Earthquake Engineering Research
PI: Rachel Davidson
Period: 10/05 to 9/06
Amount: $72,500

Title: Restoration Modeling for Lifelines
Sponsor: Multidisciplinary Center for Earthquake Engineering Research
PI: Rachel Davidson
Period: 10/04 to 9/05
Amount: $60,000

Title: Optimizing Post-Earthquake Restoration for Electric Power and Water Supply Systems
Sponsor: President's Council of Cornell Women Affinito-Stewart Grant Program
PI: Rachel Davidson
Period: 6/04 to 5/05
Amount: $11,432

Title: Restoration Analysis for Lifelines
Sponsor: Multidisciplinary Center for Earthquake Engineering Research
PI: Rachel Davidson
Period: 10/03 to 9/04
Amount: $61,000

Title: Forecasting Change in Hurricane Risk Over Time
Sponsor: National Science Foundation
PI: Rachel Davidson; C*o-PI*: David Rosowsky
Period: 8/01 to 7/04
Amount: $274,979

Title: CAREER: Research and Education in Natural Disaster Risk
Sponsor: National Science Foundation
PI: Rachel Davidson
Period: 7/00 to 6/04
Amount: $275,000 ($200,000 + $75,000 matching, maximum allowed for 3 years)

Title: Restoration Analysis for Lifelines
Sponsor: Multidisciplinary Center for Earthquake Engineering Research
PI: Rachel Davidson

Period: 10/02 to 9/03
Amount: $59,555

Title: GIS-Based Decision Support for Gas Distribution Systems
Sponsor: Keyspan Energy, Inc.
Co-PIs: Thomas O'Rourke, Linda Nozick
Senior Personnel: Rachel Davidson, Arthur Lembo, Jr., Richard Schuler
Period: 6/01 to 6/03
Amount: $272,820

Title: Use of Scientific Maps in Community Natural Hazard Mitigation Decisions
Sponsor: U.S. Geological Survey
PI: Rachel Davidson
Period: 2/01 to 12/03
Amount: $50,000

Title: POWRE: Hurricane Risk Modeling and Forecasting
Sponsor: National Science Foundation
PI: Rachel Davidson
Period: 9/00 to 2/02
Amount: $25,000

Total: about $4,650,000

ADVISING

- Primary supervisor for 1 post-doctoral scholar (past), 5 Ph.D. students (4 past, 1 current), and 8 M.S. students (6 past, 2 current).
- Committee member for 6 Ph.D. students (2 past, 4 current) and 3 M.S. students (past).
- Faculty advisor for more than 75 undergraduates

TEACHING

A. Undergraduate and Graduate Courses

- Risk Analysis, Univ. of Delaware (S08). New course.
- Statics, Univ. of Delaware (F07).
- Introduction to Decision Analysis, Cornell Univ. (F00, F01, S03, S04, F05). New course.
- Civil Infrastructure Systems, Cornell University (S01, *co-taught* S05). New course.
- Engineers for a Sustainable World, Cornell University (F03, S04, *co-taught* S03, F04, F05). New course.
- Modern Structural Systems and Materials, Cornell University (F02, F03).
- Issues in Risk Analysis Seminar, Cornell University (F01, F02).
- Sophomore Design Project Laboratory, UNC Charlotte (S00).
- Advanced Structural Analysis, UNC Charlotte (F98, F99).
- Systems and Design I, UNC Charlotte, *co-taught* (F99).
- Engineering Risk Analysis, UNC Charlotte (S99). New course.
- Computer Applications in Civil Engineering, UNC Charlotte, *co-taught* (S99).

- Applied Mechanics: Statics and Deformables, Stanford University, *Head Teaching Assistant* (F95, W96).

B. Short Course Teaching and Planning

- Federal Emergency Management Agency (FEMA) Emergency Management Higher Education Project. Focus group participant to help develop a Hazards Risk Assessment college course (9/00).
- *Command and Control of Major Disasters*, UNC Charlotte Fire Safety Program (1 day; 4/00).
- *Introduction to Engineering Risk Analysis*, UNC Charlotte Continuing Educ. (1 day; 12/99).
- *Seismic Risk Assessment and Aseismic Design of Structures*, Asian Institute of Technology, Bangkok, Thailand (1 week; 4/98).

PROFESSIONAL DEVELOPMENT WORKSHOPS ATTENDED

- Excellence in Civil Engineering Education (ExCEEd) Teaching Workshop, West Point, NY (8/00). Sponsored by the American Society of Civil Engineers.
- Workshop for the Advancement and Retention of Underrepresented and Minority Engineering Educators, Arlington, VA (9/99). Sponsored by the National Science Foundation.
- 6th Annual SUCCEED Coalition Conference and Workshops: Enhancing Teaching and Learning, and Women in Academic Careers Raleigh, NC (4/99).

OTHER SELECTED SERVICE

A. Professional

- Reviewed journal articles for *Earthquake Spectra, Journal of Infrastructure Systems, Risk Analysis*, *Natural Hazards Review*, *Journal of Wind Engineering and Industrial Aerodynamics, International Journal of Risk Assessment and Management, Journal of Architectural Engineering*.
- Reviewed research proposals and reports for National Science Foundation, U.S. Civil Research and Development Foundation, Economic & Social Research Council.

B. University

- Founding faculty advisor, Engineers for a Sustainable World (formerly Engineers Without Frontiers), Fall 2001-Summer 2006.
- Member, Committee to develop new Civil Infrastructure Systems graduate concentration, 2004-2005.
- Member, Committee to develop new Risk Analysis, Policy, and Communication graduate field and concentration (minor for M.S. and Ph.D.), 2000-2002.
- Member, Faculty group of Women in Science and Engineering (WISE), 2000-present.
- Participant, Faculty panel during Society of Women Engineers Prospective Candidates' Weekend for accepted female freshman engineering applicants, 2002, 2003, 2004, 2005.

- Participant, Faculty panel during College hosting day for prospective women students, 2001, 2002