CURRICULUM VITAE

CONTACT INFORMATION

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EDUCATION

Ph.D., Engineering Management, George Washington University, 2006.

M.S., Operations Research, Naval Postgraduate School, 1991

B.S., Liberal Arts and Science, University of Illinois, 1982

EXPERIENCE

Iowa State University, Industrial and Manufacturing Systems Engineering Department, Associate Professor of Teaching (2020-present) / Assistant Professor of Teaching (2019-2020) / Lecturer (2014-2019), Ames, Iowa

- Director of Graduate Education for both the Engineering Management and Systems Engineering online graduate programs -- major professor/advisor to over 80 graduate students
- Led efforts to prepare, present and respond to external review of both the Engineering Management and Systems Engineering interdepartmental programs – the first interdepartmental programs at ISU to complete an external review
- Committee member for 8 Ph.D. and M.S. students; supervised 31 undergraduate teaching and/or research assistants
- Taught 7 different courses; developed 5 courses suitable for both online and on-campus students
- Certified Professional in Engineering Management

National Renewable Energy Laboratory, Senior Engineer, 2007-2015, Golden, Colorado

Project lead for a variety of high visibility demanding tasks involving technical analyses, time constraints and budget management. Projects during this timeframe include:

- **Department of Defense energy efficiencies in a deployed environment.** Project lead/PI for multi-year, multi-entity effort identifying optimal energy strategies for the military while in a deployed, overseas location – value $1.2M.

- **California Plug-In Electric Vehicle Infrastructure Plan.** Co-author and analyst of the "California Plug-in Electric Vehicle Infrastructure Assessment" for the state of California.

- **Department of Defense installation energy assessment.** Optimization lead and sole optimization expert for developing large-scale mixed integer model to determine installation's optimal mix of conventional and renewable energy.

- **Air Force energy assessment.** Represented Department of Energy as part of an Air Force energy assessment team visit to Afghanistan and Qatar in 2010.

- **Federal vehicle fleet Task Lead**. Charged with supporting Department of Energy efficiency efforts for the 600,000 vehicle federal fleet.

- **Strategic energy analyses.** Task lead in providing strategic market and policy renewable energy advice to the Department of Defense for six renewable energy technologies.

- **Vehicle fleet optimization.** Lead engineer and task lead in developing and refining optimization tool for Federal agencies to minimize greenhouse gas emissions and petroleum use for their vehicle fleets.

Institute for Defense Analyses, Research Analyst, 2004–2007, Washington, D.C.

- Senior analyst supporting the Secretary of Defense by developing/using a model used to forecast the contingency costs of the military Services for operations in Afghanistan and Iraq.

- Was the primary analyst charged with initially reviewing over $30 billion of the Armed Service’s funding requests for the Global War on Terror for 2007.

United States Navy, naval officer, 1984-2004.

- **Head, Manpower and Analysis Section, Chief of Naval Personnel Staff, 2001-2004.** Supervised a 9-person section responsible for the oversight of the Navy's 400,000 person billet base.

- **Commanding Officer, Albuquerque, New Mexico Reserve Center, 2000–2001.** Responsible for the entire operations of a full-time staff of 13 people, and over 380 reservists.

- **Head, Training and Personnel Analysis, Chief of Naval Personnel Staff, 1996–2000.** Led a 3-person section responsible for the analysis of a training management budget exceeding $2 billion.

- **Operational tours (1986-1989, 1991-1993, 1995-1996).** Two F-14 squadron assignments accumulating 1,000 flight hours, and 1 tour as Assistant Navigator directing aircraft carrier movements. Three 6-month deployments to the Persian Gulf. Multiple supervisory positions.

- **Mathematics Instructor, U.S. Naval Academy, 1993-1995.** Taught the entire Calculus series, and was awarded the "Master Instructor of Mathematics" title for extraordinary performance for teaching at the Naval Academy.

SKILLS

- Highly adept at leading challenging, high visibility work-related efforts that often involve sensitive issues and/or time constraints.

- Ethical and fair. Will "do the right thing" for the organization.

- Superior teaching, for both on-campus and online students, at both the undergraduate and graduate levels.

- Very comfortable in developing relations with external entities that can be of mutual benefit for them and the university.

- Strong analytical and communication skills.

AWARDS

- **Lecture Capture paper** "Lecture Capture and Learner Engagement Strategies for Industrial Engineering Distance Education: Results of a Pilot Program" awarded "Best in Class" for Education Class, The International Joint Conference ICIEOM-ADINGOR-IISE-AIM-ASEM (IJC 2017) Valencia (Spain), 6th – 7th July 2017.

- **National Renewable Energy Lab Team Staff award, 2011.** Developed the optimization work that illustrated the large-scale efficiencies that were possible for federal vehicle fleets, and the opportunities for dramatic increases in greenhouse gas reduction and petroleum reduction, at no costs to federal agencies.

- **Department of Energy Federal Energy Management Program's Energy Champion award, 2010.** Details follow below.

Dr. Helwig (left) and Dr. Barnett's Energy Champion Award Poster

Energy Champion Award Citation: International Twenty-First Century Citizenship is being shaped by leaders like Dr. John Barnett and Dr. Michael Helwig of the U.S. Department of Energy's National Renewable Energy Laboratory, who traveled with Defense Department teams to military bases in Afghanistan and the Arabian Peninsula to assess the provision of energy and water to expeditionary forces. Recommendations to reduce battlefield reliance on imported fossil fuel and water include energy efficiency best practices; solar water heating; solar PV electricity; smart micro-grid projects; onsite water wells, and improved vehicle fleet management. Implementation can potentially reduce convoy needs by as much as 50 percent, saving American taxpayers millions of dollars each month and further protecting the safety and security of American troops deployed overseas.

- **National Renewable Energy Lab Director's Award, 2008.** For task work supporting the Department of Energy's federal vehicle efficiency efforts.

- **Navy awards, 1984-2004.** Twelve separate personal decorations; six unit awards.

SELECTED PUBLICATIONS AND PRESENTATIONS

- Jenner, A., Helwig, M., & Rufer, A. (2018). Lecture capture and learner engagement strategies for industrial engineering distance education: results of a pilot program. *Production*, *28*, e20170078.https://doi.org/10.1590/0103-6513.20170078.

- Sly, D; Helwig, M and Hu, G (2017). “Improving the Efficiency of Large Manufacturing Assembly Plants,” *Procedia Manufacturing*. Volume 11.

- "California Statewide Plug-In Electric Vehicle Infrastructure Assessment," National Renewable Energy Laboratory Technical Report, May 2014.

- "Targeting Net Zero Energy at Marine Corps Air Station Miramar: Assessment and Recommendations," National Renewable Energy Laboratory Technical Report, December 2010.

- "Improving Energy Efficiency in a Deployed Environment,” Air Force Energy Assessment Team report, 29 March, 2010

- Helwig, M. (2009). "Reducing Federal Petroleum Use: Mandates and Strategies," FEMP FOCUS Winter 2009, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. January.

- Helwig, M and Deason, J. (2007). "The Energy Policy Act of 1992 and Executive Order 13149: Proposed compliance strategies and process improvements for federal agencies,” *Energy Policy*. May.

- “Lecture Capture and Learner Engagement Strategies for Industrial Engineering Education: Results of a Pilot Program.” Presented at the International Joint Conference, Valencia, Spain. Alicia Jenner, Michael Helwig and Arlette Rufer abstract authors; Helwig and Rufer presenters. July 2017.

- **Informal Presentations.** Much written material was produced and delivered informally – often for senior DoD personnel. Examples follow.

    - Deputy Chief of Naval Operations, Dec 2012. Navy "Net Zero" opportunities.
    - Deputy Assistant Secretary of the Army, Oct 2012. Army installation efficiency opportunities.
    - Army Science Board, 2011. Inefficiencies in the operational environment.
    - Vice Chief of Staff of the Air Force, Jan 2010. Outbrief of Afghanistan visit.

GRANTS: 2016–2023 at Iowa State University

- Co-PI for Office of Naval Research multi-year grant – goal is to introduce students to various aspects of the U.S. Navy via analytical and problem-solving approaches

- PI for 5 separate grants focused on improving engagement of online students

- Co-PI for Iowa Space Grant Consortium/NASA sponsor (research of student learning via hands-on approach and construction of workstations for Industrial Engineering courses).

- Co-PI for Digital Manufacturing and Design Innovation Institute (DMDII) sponsor, providing project management expertise and guidance

Service at Iowa State University

- Formal mentor for faculty in the Department

- Alpha Sigma Kappa faculty advisor (women's STEM sorority)

- Alpha Lambda Delta faculty advisor (national honor society)

- Navy ROTC faculty liaison

- Recruiting and Retention Committee

- Graduate Education Committee (focus on Engineering Management and Systems Engineering students and degrees)

- International Program Advising/Department Study Abroad Coordinator

- Course Coordinator, IE 305 (Engineering Economics course enrolling over 600 students annually)