

Nathan Parker
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Education

University of California, Davis
In pursuit of PhD.
Master of Science, March 2007
Transportation Technology and Policy

Wake Forest University
Winston-Salem, NC
Bachelor of Science, May 2001
Major: Physics

Work Experience

University of California, Davis, Institute of Transportation Studies (10/03 – present)

Optimizing the Design of Biomass Hydrogen Supply Chains Using Real-World Spatial Distributions: A Case Study Using California Rice Straw (02/05 – 03/07)

Master's thesis work with Dr. Joan Ogden to develop a spatially-explicit supply curve for hydrogen produced from waste biomass. Tasks include the compilation of waste biomass supply and hydrogen demand center databases in GIS, the development of engineering-economic models of the conversion facilities, transport and storage of feedstock and hydrogen, and finally the creation of a nonlinear programming model in GAMS that optimizes the size and location of the conversion facilities and chooses the refueling stations served.

Modeling Framework for Dynamic Hydrogen Infrastructure (07/04 – 03/5)

Exploratory research into different methods for modeling the growth of an infrastructure for refueling of hydrogen vehicles. A limited-scale simulation model was developed using STELLA modeling software and dynamic programming techniques were explored. I may pursue this research topic further at a later date.

Hydrogen Pipeline Cost Study (10/03 – 12/04)

Work with advisor Dr. Joan Ogden to estimate the cost of hydrogen pipeline construction using cost data from existing natural gas transmission pipelines.

Capacitor and Battery Testing (11/03 – 06/04)

Research assistant to Dr. Marshall Miller. Tested ultracapacitors and pseudocapacitors for energy storage, internal resistance, capacitance and efficiency using Arbin and Bitrode laboratory testing equipment.

North Carolina A&T State University, Greensboro, NC (10/01 – 07/03)

Demonstrations Manager for lower division physics courses. Designed, built, and performed demonstrations to enhance understanding in lower division physics courses. Orchestrated community outreach projects with local elementary schools. Designed and built prototypes for a "Physics Playground" at the Greensboro Children's Museum. Tutored students in mathematics and physics. Taught laboratory classes.

Wake Forest University, Winston-Salem, NC (09/99 – 05/01)

Teacher's Assistant for Introductory Physics courses. Conducted tutorial sessions for up to twenty students. Taught laboratory courses, devised improvements to existing experiments. Maintained equipment and graded students' work.

Papers and Invited Presentations

Parker, Nathan. "Optimizing the Design of Biomass Hydrogen Supply Chains Using Real-World Spatial Distributions: A Case Study Using California Rice Straw," Master's thesis, University of California, Davis. March, 2007.

Parker, Nathan. "Using Natural Gas Transmission Pipeline Costs to Estimate Hydrogen Pipeline Costs." UCD-ITS-RR-04-35. December 2004. <http://its.ucdavis.edu/publications/2004/UCD-ITS-RR-04-35.pdf>

Parker, N. "Production of Hydrogen from Waste Biomass," Presentation for California Fuel Cell Partnership, West Sacramento, CA. March 7, 2006.

Parker, N., "Production of Hydrogen from Waste Biomass," Presentation for Cal/EPA Secretary's Seminar, Sacramento, CA. September 27, 2005.

Conference Presentations

Parker, Nathan. "Optimal Design of Hydrogen Production from Agricultural Waste," presented at the National Hydrogen Association Annual Meeting. San Antonio, TX. March 19-22, 2007.

Parker, Nathan. "Optimal Infrastructure for Agricultural Waste-based Hydrogen" presented at the The Institute for Operations Research and Management Science (INFORMS) Annual Meeting. Pittsburgh, PA. November 8th, 2006.

Parker, Nathan. "Optimal Design of Hydrogen Production Infrastructure from Agricultural Waste," presented at National Hydrogen Association Annual Meeting. Long Beach, CA. March 12-16, 2006.

Parker, Nathan. "Optimal Design of Hydrogen Production Infrastructure from Agricultural Waste," presented at SAEINDIA – 5th International Symposium on Fuels and Lubricants, New Delhi, India. March 8-10, 2006.

Parker, Nathan. "Spatially-Explicit Economic Assessment of Hydrogen from Waste Biomass: A California Case Study with Rice Straw," presented at 2006 Transportation Research Board 85th Annual Meeting, Washington, DC. January 22-26, 2006.

Burke, Andrew, Marshall Miller and Nathan Parker. "Ultracapacitor Technology: Present and Future Performance and Applications," presented at the 2004 World Summit on Advanced Capacitors, July 2004.