

MAE Praxair Seminar

Driving Design: Modeling the Influence of Market Forces and Public Policy on Vehicle Design Decisions

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Abstract:

Vehicle design is experiencing major changes as global warming and dependency on foreign oil become increasingly urgent challenges. In December, Congress passed the Energy Independence and Security Act of 2007, which raises corporate average fuel economy standards to 35 mpg, combines cars and trucks into a single category, and provides incentives for alternative fuels. Such policies provide constraints, penalties and incentives in an attempt to influence vehicle design outcomes, but the effect of policy on design is complicated by engineering tradeoffs, customer preferences, and competition. Professor Michalek will describe efforts at Carnegie Mellon to construct an integrated quantitative model of engineering design tradeoffs, consumer choice behavior, market competition, and regulation in the automotive industry to predict the impact of energy and environmental policy on vehicle design, and the resulting implications for environmental impact.

Bio:

Jeremy J. Michalek is an Assistant Professor of Mechanical Engineering & Engineering and Public Policy at Carnegie Mellon University and the Director of the Design Decisions Laboratory. His research and teaching areas include design, optimization, product development, economics and market systems, econometrics, green design and environmental policy. He has industry experience at Xerox, General Motors, and Linear Systems Corporation. He has earned a number of awards including the Best Paper Award at the American Society of Mechanical Engineers Design Automation Conference, the George Tallman Ladd Research Award for outstanding research and professional accomplishments, and the National Science Foundation Early CAREER Award. Jeremy earned his Ph.D. in Mechanical Engineering from the University of Michigan in 2005 and focused on using systems optimization to coordinate engineering design decisions with business and public policy models. Jeremy is a member of ASME, AIAA, and INFORMS as well as the Green Design Institute at Carnegie Mellon University.

**110 Knox Hall
Thursday, April 10th, 2008
3:30 pm – 4:30 pm**