NEWS

TRB
TRANSPORTATION RESEARCH BOARD
500 Fifth Street, NW
Washington, DC 20001

Embargoed Until 3:00 p.m. January 21, 2007
News Release

Date: January 21, 2007
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SCIENCE WRITER PAUL HAASE WINS THE DOUG MACDONALD CHALLENGE

Can a simple explanation be devised to illustrate to the public why highway tolls that go up and down with demand might speed traffic and ease congestion? That was the puzzle set earlier this year for the $1000 Doug MacDonald Challenge Prize.

Paul Haase—a Sammamish, Washington science writer—is the winner of the Washington State Department of Transportation Secretary Douglas MacDonald Challenge. The challenge, conducted by the Transportation Research Board (TRB) in cooperation with the Washington State Department of Transportation (WSDOT), had the goal of explaining the concept of maximizing throughput to a skeptical public. Haase won the challenge by equating traffic throughput to rice flowing through a funnel. Haase demonstrated that rice dumped all at once into a funnel gets backed up and flows more slowly than the same amount of rice released in a controlled fashion into an identically sized funnel.

The contest was the brainchild of Douglas B. MacDonald, the Secretary of Transportation in Washington State and a member of the TRB Congestion Pricing Committee. The goal was to seek out new ways of engaging the public to consider that variable tolls for highway use could offer big gains for the efficiency of roads and the convenience of travelers. According to Secretary MacDonald, "Haase's demonstration first pours the rice into one funnel all at once. This creates, just as you would expect, an instant rice jam. People recognize that funnel as showing the highway traffic they are stuck in every day. When Haase next pours the same amount of rice at a paced rate smoothly and quickly through (and never blocking) the funnel, this prompts the obvious question 'Why can't we do that on a highway?' The answer is that we can. Setting the entry toll for the highway will pace the traffic just like Haase's steady hand.

Why did Secretary MacDonald select Haase's concept as the winner? "I loved its simplicity and its appeal to common experience. Rice is something we have all handled. We know exactly what is going to happen even before he shows us! We laugh just for a moment that the little grains of rice will be used to stand for cars, but we immediately accept that that rice jam surely does resemble our worst traffic nightmare. As the demonstration points a way to an answer, we say that maybe we really could figure out ways to make things better, if we used such a simple and intuitive analogy to make our point!"

The Secretary uses examples from his home state where managing the flow of traffic has paid dividends for his fellow citizens. Transponders that automatically pay tolls on the Tacoma Narrows Bridge keep travelers moving and prevent jam-ups like those experienced at traditional toll booths. Variable speed limit signs that are activated during poor conditions on the Snoqualmie Pass keep travelers moving at the same,

steady speed. MacDonald hopes that "someday, maybe even variable prices for entering key freeways or the supply-and-demand concept will keep everyone moving faster on the same lanes of roadway we jam up on today."

In launching his challenge, Secretary MacDonald made a personal donation of $1,000 as the award for the person or group that suggested the best idea. Mr. Haase will receive his prize from Secretary MacDonald at 3:00 p.m. on Sunday, January 21, 2007, during a TRB Annual Meeting workshop on emerging issues in transportation pricing and finance at the Hilton Hotel Ballroom East in Washington, D.C.

Attendees at the Annual Meeting will have an opportunity to try their own hand (and brain) to pace the rice and race the traffic jam. The demonstration will be set up at Session 255, Maximizing Highway System Efficiency and Throughput: Communicating Principles of Congestion Pricing to the Public (The Doug MacDonald Challenge) on Monday, January 22, 2007, from 9:30 a.m. - 12:00 p.m., Hilton Hotel International Ballroom Center. The entries of the other contest finalists will also be on view at that session, including:

- Daniel L. Dornan, P.E., Senior Consulting Manager, AECOM Consult, Inc., Bonita Springs, Florida;
- Eileen Singleton, Senior Transportation Engineer, Baltimore Metropolitan Council, Baltimore, Maryland;
- Sarah Barbrow, Jessica Bosanko, Caroline Cheng, Allison Cobb, Jennifer Coleman, Andy Darrell, Julia Haley, Michael Replogle, Carol Rosenfeld, Erica Rowell, and Leslie Valentine, Environmental Defense, New York, New York;
- Tim Lomax, Ph.D., P.E., Program Manager, Mobility Analysis, Texas Transportation Institute, College Station, Texas;
- Carlos M. Contreras, President, C&M Associates, Inc., Dallas, Texas;
- Matthew E. MacGregor, P.E., CDA / Tollway Director, Texas Department of Transportation – Dallas District, Mesquite, Texas;
- Ben Orsbon, AICP, South Dakota Department of Transportation, Pierre, South Dakota;
- Jianyang Zheng, Mike Lowry, Num Cheevarunothai, Yao-Jan Wu, and Guohui Zhang, University of Washington, Smart Transportation Applications and Research (STAR) Lab, Seattle, Washington;
- Mark Huentelman, Bellevue, Washington; and
- Abe Mouaket, Ph.D., P. Eng., iM associates/City of Toronto, Thornhill, Ontario, Canada

More than 10,000 policy makers, administrators, practitioners, researchers, and representatives of government, industry, and academic institutions are expected to attend the Transportation Research Board (TRB) 86th Annual Meeting, in Washington, DC, January 21-25, 2007. The meeting, held at the Marriott Wardman Park, Omni Shoreham, and Hilton Washington hotels, includes more than 2,800 presentations in 500 sessions, 75 workshops, and 400 TRB committee meetings covering all aspects of transportation.

TRB's mission is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, TRB facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation. A major focal point of TRB's activities, the Annual Meeting provides an opportunity for transportation professionals from all over the world to exchange information of common interest.

Organized in 1920, TRB is a division of the National Academies, which include the National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council. The nation turns to the National Academies for independent, objective advice on issues that affect people's lives worldwide.