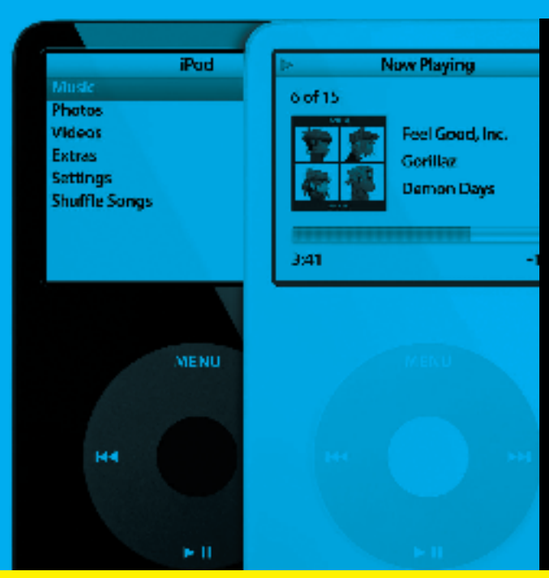
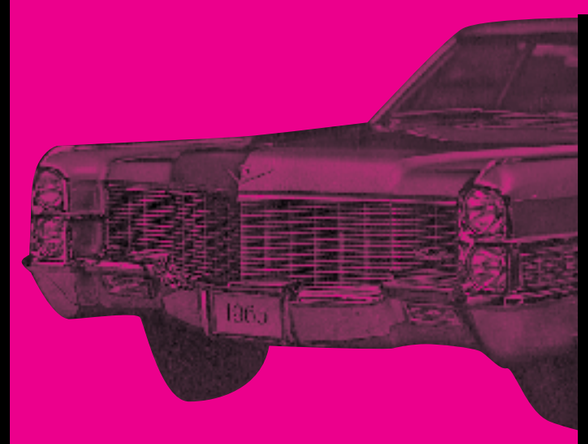
12 songs



7,500 songs

0 GB

100 GB



17 mpg

60 mpg

status quo

what's next

?

high performance corridors – it's time to put the *rush* back in rush-hour.

Environmental Defense. New York, NY.

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Sarah Barbrow, Jessica Bosanko, Caroline Cheng, Allison Cobb, Jennifer Coleman, Andy Darrell, Julia Haley, Michael Replogle, Carol Rosenfeld, Erica Rowell, and Leslie Valentine.

CAR-FLOW

Traffic engineers work to get the greatest flow of cars and trucks along highways, a process called 'throughput maximization.' A better term might be 'maximizing car-flow.' The physics of car-flow on a highway resemble those of rice poured through a funnel. If you pour slowly, you get little out. But if you pour too fast, the rice clogs and you get little – or nothing – out either. A clog happens because the rice grains require certain organization to fit through the funnel bottleneck and, if poured too quickly, they haven't time to organize and clog instead. To funnel your rice fastest, you want the maximum pouring speed that doesn't produce a clog.

Car-flow involves similar thinking. For any highway there's a particular in-between speed that moves the most vehicles under typical conditions. Traffic engineers thus maximize car-flow with measures such as on-ramp metering lights (slower pouring) and fast tire-change services (shaking the funnel) that keep traffic at this optimum speed.

Basic car-flow concepts from funneled rice to metering lights could be demonstrated in a 30-second video.

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Washington State Department of Transportation

Entry by: Paul Haase, freelance science writer

WINNER OF THE CHALLENGE

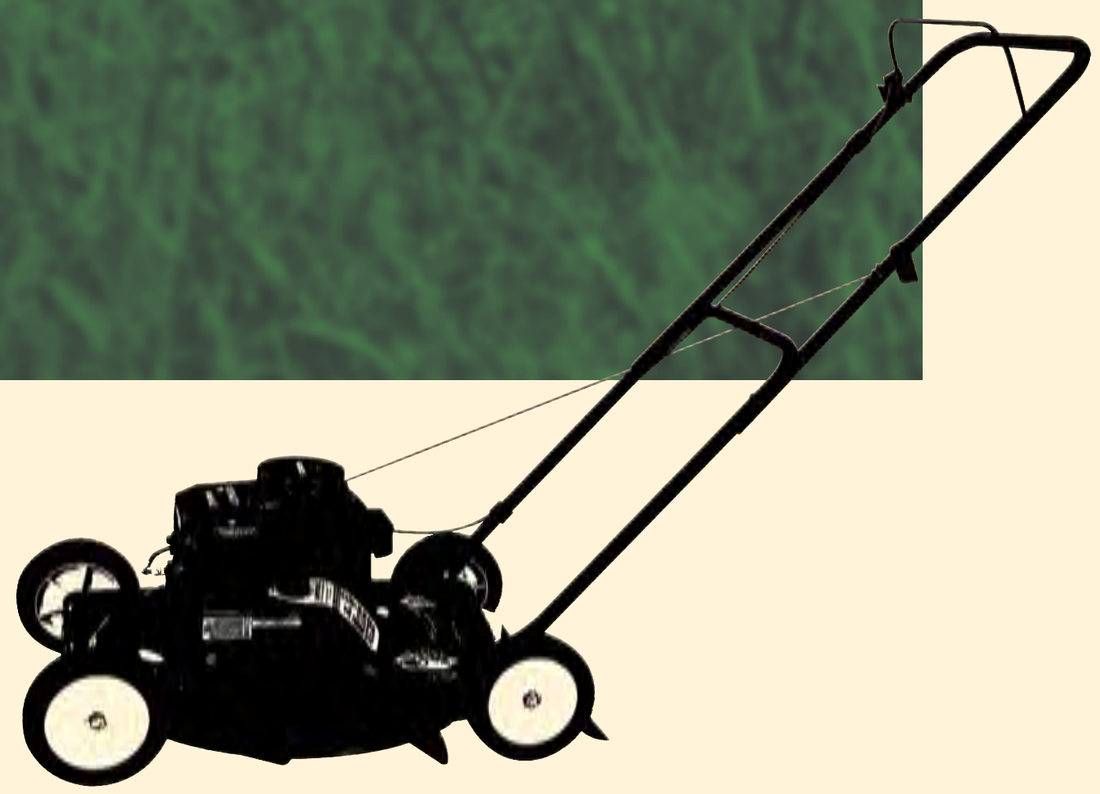
TRAFFIC CONGESTION AND THE CLOGGED LAWN MOWER
UNDERSTANDING THE ROOT CAUSES OF TRAFFIC CONGESTION THROUGH A PARABLE
A True Story based on a Child's Lawn Mowing Experience

TRAFFIC CONGESTION is a cancer on the nation's economy and quality of life. It reminds me of my childhood lawn mowing business which almost failed when a rainy spring made the grass grow faster and longer while keeping the ground wetter. When I could mow, the mower frequently jammed when the grass-catcher clogged with clumps of grass cuttings, forcing frequent stops to unclog the grass-catcher opening. This is similar to what happens when too many vehicles congest our highways. Once the number of vehicles per lane reaches a certain level, they begin to "clump together" like long, wet grass clippings and reduce the highway's effective capacity.

To solve my mowing problem, I raised the cutting blade, reduced the length of grass entering the grass-catcher, and increased the mower's efficiency. Thereafter my business thrived.

If applied to traffic congestion, similar results are possible by improving facility operational efficiency through selected approaches, like pricing managed lanes, promoting intermodal integration, and applying new technologies. The results can be a win-win solution for providers and users of transportation facilities.

– Daniel L. Dornan, P.E.
October 27, 2006



Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Daniel L. Dornan, PE
Senior Consulting Manager, AECOM Consult, Inc.

Boniat Springs, FL.

traffic gaming

We propose to use a video game to educate the public about transportation. By playing the game, the public will "pull" for transportation facts behind the game, rather than be "pushed" with complicated transportation figures. The entertaining and challenging interaction with the game will entice users while effectively answering their questions about transportation. The U.S. Army, for example, developed their video game "America's Army" for public relations and recruitment and successfully attracted millions of game registers. Our proposed game will be free to download or play online at transportation websites. The player's task in this game is to keep a freeways section at maximum capacity by employing and adjusting given transportation operations, such as ramp meter, HOV lane, HOT lane, toll gate, etc.

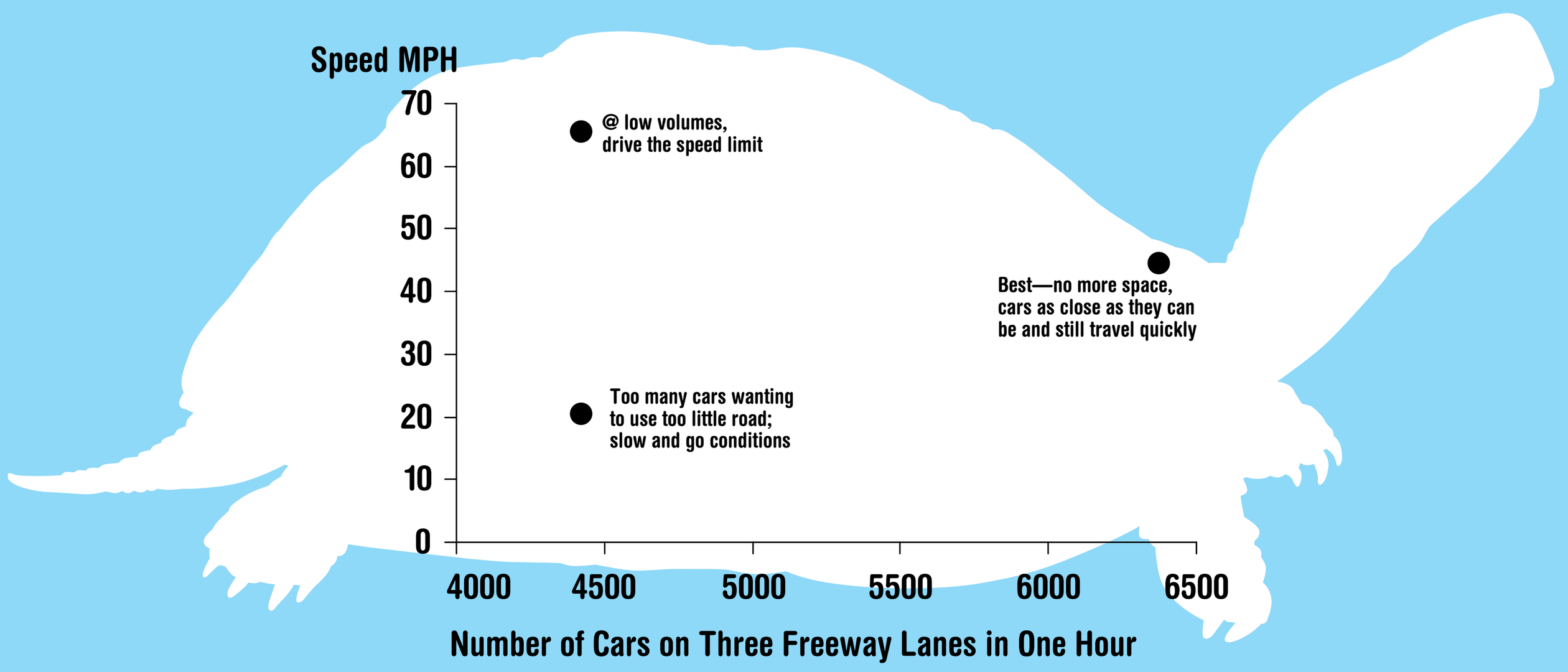
Jianyang Zheng | Mike Lowry
Num Cheevarunothai | Yao-Jan
Wu Guohui Zhang

University of Washington | Smart Transportation Applications and Research (STAR) Lab

Seattle, WA

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

GET THERE FASTER BY GOING SLOWER



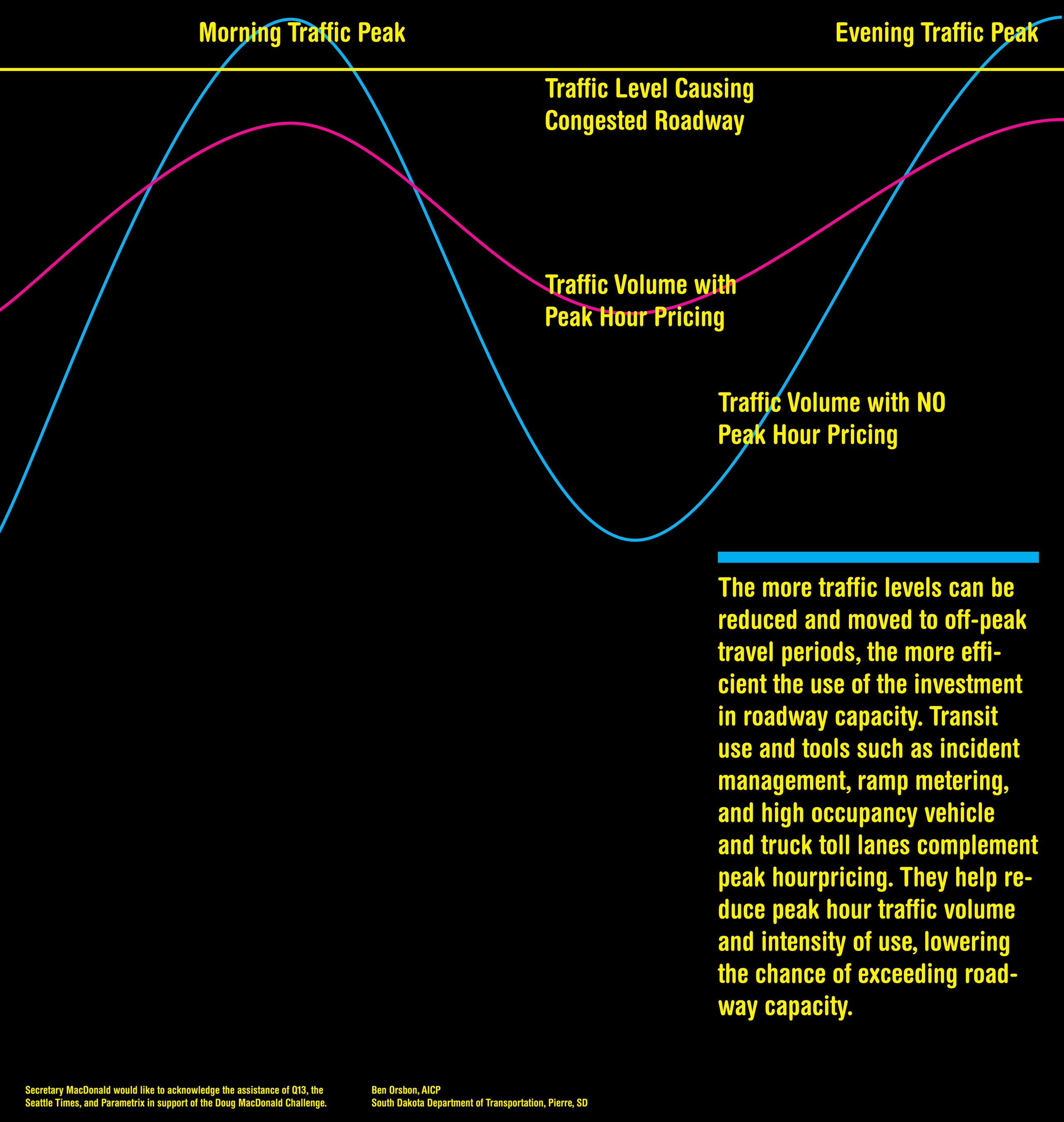
With traffic, the key is to get the cars organized, regularly spaced and traveling at about 40 to 50 mph. If the drivers start to speed up, some are uncomfortable and they will tap their brakes— causing everyone behind to slow down. Or, if more cars join the freeway, drivers are also uncomfortable and will slow down. Either of these events causes a traffic jam.

Very slow speeds mean fewer cars can use the freeway each hour. In fact, where the best 3- lane freeways can carry 6,500 cars at 45 mph in one hour, a typical congested freeway handles only 4,500 cars at 20 mph.

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Tim Lomax, Ph.D., P.E.
Program Manager, Mobility Analysis
Texas Transportation Institute. College Station, TX

Lowering Peaks and Raising Valleys Efficiently Uses Roadway Capacity By Spreading Traffic to Non-Peak Periods



The more traffic levels can be reduced and moved to off-peak travel periods, the more efficient the use of the investment in roadway capacity. Transit use and tools such as incident management, ramp metering, and high occupancy vehicle and truck toll lanes complement peak hourpricing. They help reduce peak hour traffic volume and intensity of use, lowering the chance of exceeding roadway capacity.

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Ben Orsbon, AICP
South Dakota Department of Transportation, Pierre, SD

CHAOS

Do you have a closet that is disorganized? Do you have wasted space? You know that if you used the space more efficiently, you could store more in your closet and it would be easier to find things. It's the same with roads and transit. If roads and transit are operated more efficiently, more people and vehicles could use them more safely.

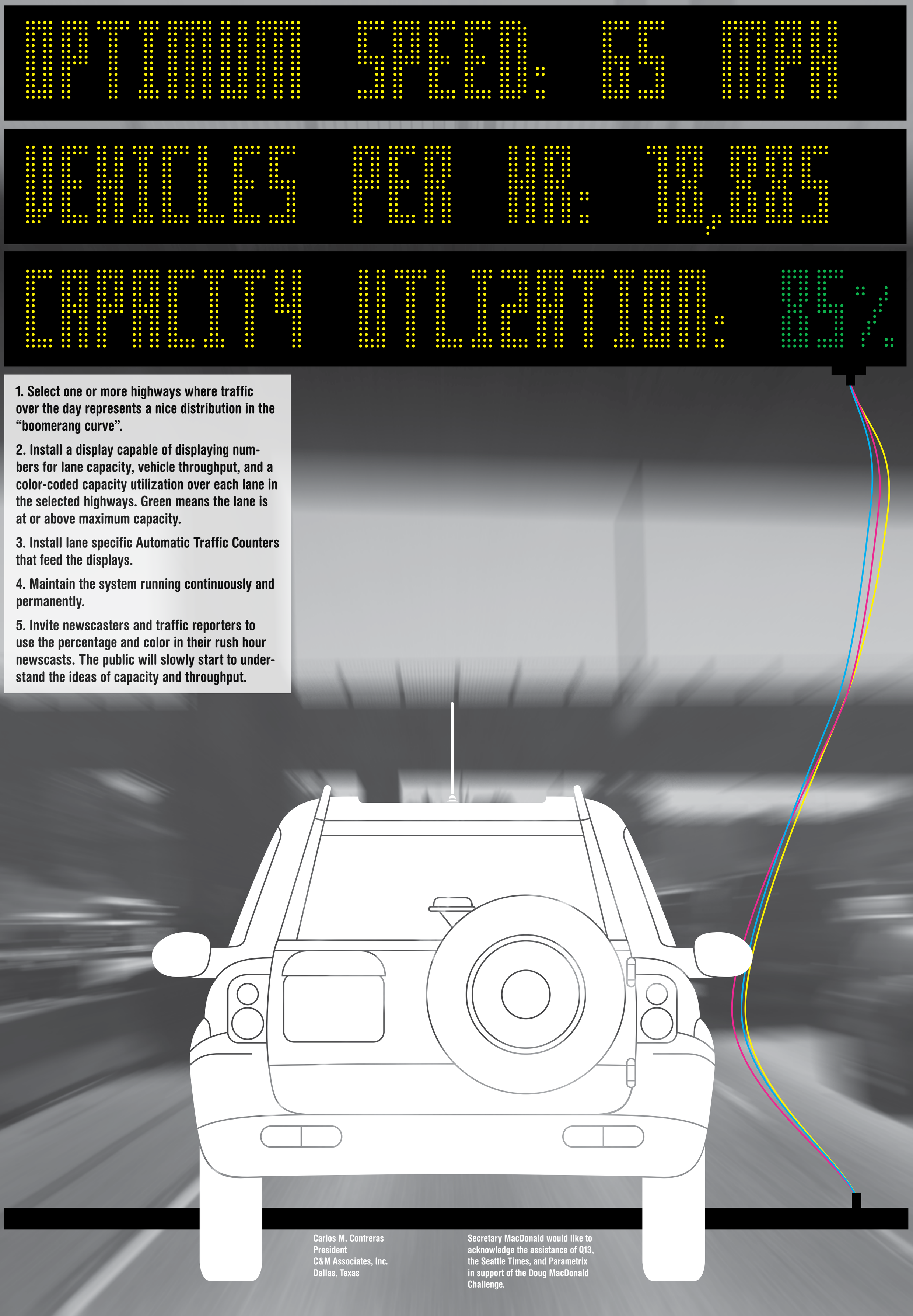
Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Submitted by:
Eileen Singleton
Baltimore Metropolitan Council, Baltimore MD

ORDER

There are quite a few techniques for improving operations that are already being used throughout the country:

Technique	Benefit
Retiming traffic signals so they are coordinated with each other and traffic volumes.	Reduces delay and number of stops.
Using cameras and speed detectors to monitor traffic movement.	Speeds identification of and response to accidents and other traffic blockages.
Clearing traffic accidents more quickly and efficiently.	Reduces delay, distractions, and accidents.
Tracking location of buses.	Improves schedule adherence; reduces operating costs.



1. Select one or more highways where traffic over the day represents a nice distribution in the “boomerang curve”.

2. Install a display capable of displaying numbers for lane capacity, vehicle throughput, and a color-coded capacity utilization over each lane in the selected highways. Green means the lane is at or above maximum capacity.

3. Install lane specific Automatic Traffic Counters that feed the displays.

4. Maintain the system running continuously and permanently.

5. Invite newscasters and traffic reporters to use the percentage and color in their rush hour newscasts. The public will slowly start to understand the ideas of capacity and throughput.

Carlos M. Contreras
President
C&M Associates, Inc.
Dallas, Texas

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

CPR for highways

continuous

reliable

predictable

Improve Access Points

Ease/Eliminate Bottlenecks

Offer Choices

Pay a Fee for Predictability & Reliability

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Matthew E. MacGregor, P.E. (HONORABLE MENTION)
CDA/Tollway Director
Texas Department of Transportation, Dallas District. Mesquite, TX

let them pay and we'll all get home faster

Today

Today when there are more cars than a road can handle, we go painfully slowly on our way home. When we are stuck in traffic it is because the number of cars has exceeded what engineers call the "free-flow capacity" of the road. We call it rush hour, when the roads fail.

Tomorrow

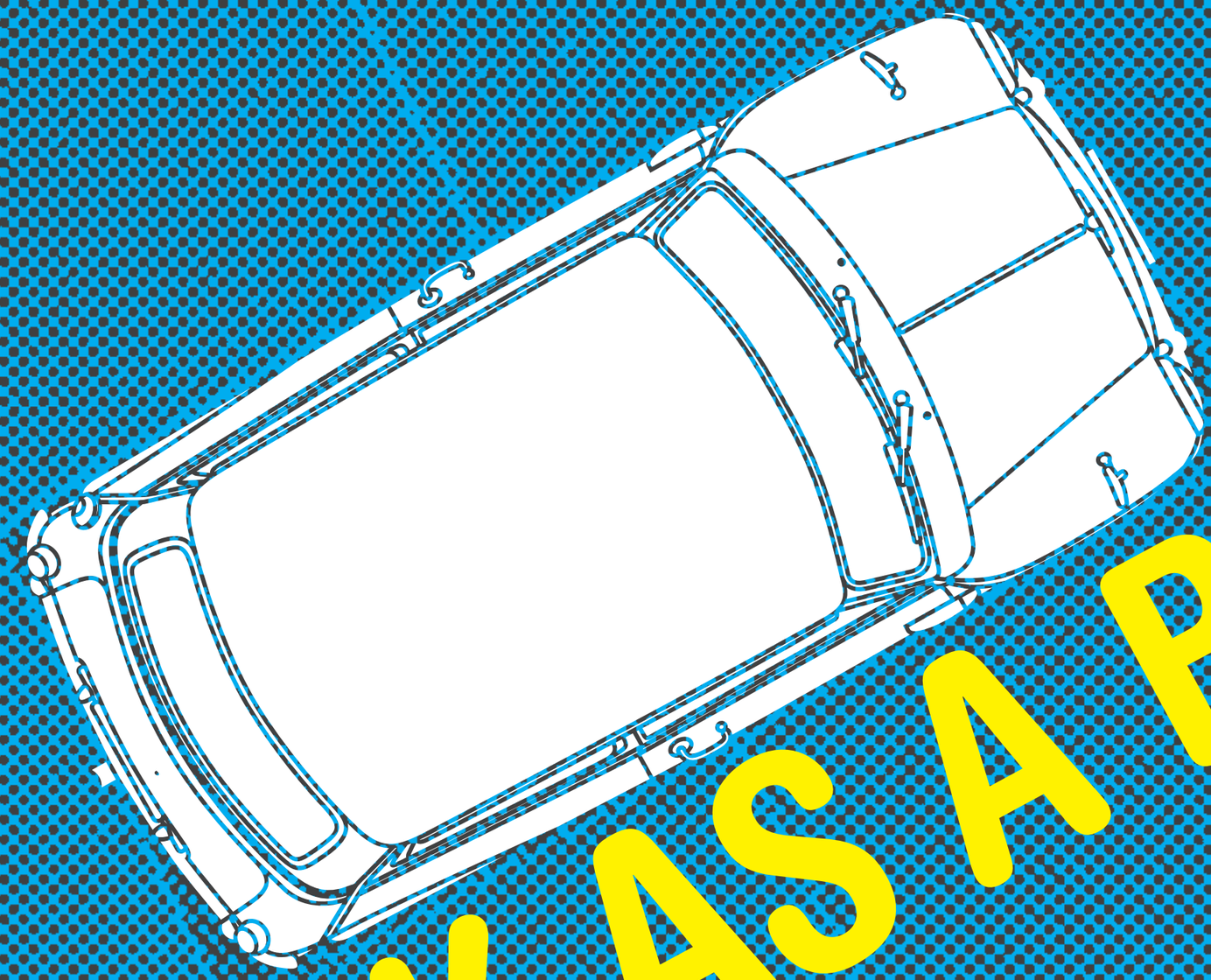
Tomorrow we will have two roads to travel home: free on the freeway and pay on the "payway". On the payway some will pay for a road that is always below its free-flow capacity. They will pay-as-they-go, literally. At the same time rush-hours on the freeway will shorten and our average travel time will go down.

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Why?

Because the freeway will not reach its free-flow capacity as often. In the end more of us will get home faster with two roads home than with just one. Payways will turn someone else's "need for speed" into a faster trip home for all of us.

Mark Huentelman
Bellevue, WA



IS A BRICK?

On demolition sites, shoving too many bricks into construction chutes often plugs the chutes, and stones do not go through. The friction between the stones in this case is high and the stones impede each others' movement. Removing a few stones causes the rest to roll out faster, this increasing the flow.

The same is true for traffic. Friction between cars is related to driver speed and roadway geometrics. Slow cars impede others from passing thus reducing the amount of traffic that can go through. High speed vehicles intimidate other drivers and compel them to keep greater distances from the speeding cars; this also reduces the flow on the road.

Applying tolls entices those who can defer their trips to off-peak, or to choose other modes of travel. High occupancy lanes encourage people to pool their travels. Metering entry to the freeway controls the traffic entering the system.
All these measure reduce traffic friction and allow cars to travel faster. Traffic flow increases as a result.

Secretary MacDonald would like to acknowledge the assistance of Q13, the Seattle Times, and Parametrix in support of the Doug MacDonald Challenge.

Abe Mouaket, Ph.D., P.Eng.
iM Associates/City of Toronto, Ontario, Canada