

# Real-Time Dynamic Brake Assessment

## Purpose

Conduct a proof-of-concept test to examine the feasibility of developing an on-board system to assess a vehicle's ability to stop based on typical low-pressure in-service braking events.

## Partnerships



H.T.  
Hackney  
Company



MGM  
Brakes

## Data Collection Conceptual Overview

Specially-modified MGM e-Stroke system collecting brake application pressure at 10 Hz (10 readings per second).



Air-Weigh self-weighting system providing real-time vehicle weight



On-board data acquisition system constantly collecting and storing all data.

## Overview

- Funded through the Federal Motor Carrier Safety Administration's Vehicle and Roadside Operations Division
- Concept stemming from on the Department of Energy's Medium Truck Duty Cycle research as well as previous research conducted for the National Highway Transportation Safety Administration.
- Signals to be collected
  - Real-time brake application pressure
  - Vehicle speed and acceleration
  - GPS location and grade information
  - Vehicle weight (current load)
  - Engine parameters such as RPM and torque
- To be conducted October 2010 – March 2011

## Test Scenarios

- In-service testing – performed by recording duty cycle data specifically to collect information about braking events as the vehicle goes about its normal vocational operations (1-2 months).
- Scripted testing – involves a series of specified braking events from a variety of speeds, loads, and constant brake pressures (up to 4 days of testing).
- Performance-based brake test (to be performed at Greene County Inspection Station)

## Benefits

- The vision for a fielded system is a "Score" that parallels the PBTT machine's score of 43.5 or greater for passing. This on-board device could be used as screening tool or indicator that a particular vehicle is a good candidate for a Level-1 inspection or a PBTT test.
- This concept could be a good companion to the currently ongoing Commercial Mobile Radio Services (CMRS) Wireless Roadside Inspection (WRI) by providing valuable brake data with little additional cost for sensors or technology.
- An on-board brake assessment such as this would allow drivers to know immediately of any brake system problems that would prevent the vehicle from stopping within a safe distance.

