

# 2014 PEMS

## Conference & Workshop 4

April 3 & 4, 2014

UCR | CE-CERT 1084 Columbia Ave, Riverside, CA



8:30 - 14:00 Special Ride and Drive Event - April 4, 2014

A special ride-and-drive event to experience in-use testing on advanced hybrid electric vehicles. Ask engineers and scientists all your questions while you ride and learn about PEMS testing with the latest tools. The ride and drive will be occurring in parallel with the presentations.

### 9:00 Research Developments

U.S. EPA Carol Fulper Emissions and Activity Measurements from Heavy-Duty Vehicles "Drayage" Results in the Houston Galveston Area

TBD

### 9:40 In-use Fuel Consumption Approaches

UC Riverside Kanok Boriboonsomsin Method for Normalizing Vehicle Fuel Economy from On-Road Testing under Real-World Driving Conditions

HEM Data Rick Walter Fuel Economy Calculations from In-Vehicle Network Parameters for Light & Heavy Duty Vehicles

North Carolina State University Gurdas Sandhu Real-World Activity and Fuel Use of Diesel and Compressed Natural Gas Refuse Truck

10:40-11:00 Break

### 11:00 In-Use Fuel Consumption Approaches

InfoWedge Andrew Burnette Comparison of PEMS/PAMS and Daily Log Fuel Efficiency Data for Refuse Haulers in a Municipal Fleet

Texas A&M Transportation YuChe Chen Method for Normalizing Vehicle Fuel Economy from On-Road Testing Under Real-World Driving Conditions

Eastern Research Group Michael Sabisch PAMS-based Light-Duty Vehicle Fuel Economy Pilot Study Overview

Institute for Transport Studies Karl Hopkins Automating PEMS Micro-Trip Analysis

12:00- Lunch and Continuing Ride and Drive Event

13:00 - Lessons

### 2:40 In-Use Approaches for Advanced Vehicles

HEM Data Rick Walter 60 Minute Lesson- Engine and Vehicle Networking Databases . The difficulty in performing and interpreting in-use vehicle network signals: An in-depth analysis.

UC Riverside Kent Johnson Closing Remarks and Feedback

14:20 Presentations Adjourn and Continue Ride and Drive Discussions

15:00 Special Guided Mountain Bike Ride - by Kent Johnson



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### 8:30 Introduction - April 3, 2014

UCR	Ma <sup>o</sup> Barth	Welcome to UCR
TBD	Keynote Speaker	Air, Climate, and Energy
UCR	Kent Johnson	PEMS: Hypermilling with Mythbusters 2013 Highlights

### 9:00 Regulatory Developments and Future Trends

China, EPD	Carol Wong	Recent Development of On-Board Vehicle Emissions Measurements in Hong Kong
European Union JRC	Francesco Riccobono	Results of the European PEMS-PN Measurement Program for the Type A Approval of Light-Duty Vehicles in Europe
U.S. EPA	Allen Duncan	In-Situ Emissions Performance of EPA2010-Compliant On-Highway Heavy-Duty Diesel Engines

### 10:00–10:20 Poster Discussions

US-EPA	Carl Fulper	US Methodology and Future Data Gathering Efforts for In-Use Testing
Sensors, Inc.	David Booker	Challenges and Solutions for Light Duty Real-World PEMS Testing under the auspices of the European RDE/LDV Program
CARB	Donald Chernich	

### 11:20 Research Developments

LLNL	L.Y. Woo	Development of Novel, Low-Cost Signal Processing for Single-Cell NOx Sensors
Cummins Inc & UC Riverside	Tanfeng Cao	Comparison of the SEMTECH ECOSTAR Continuous Particulate Measurement to the AVL Micro Soot Sensor, the AVL Advanced Particle Counter and CVS Gravimetric Particulate Measurement

### 12:00–1:00 Lunch (Poster Discussions)

### 1:00 Research Developments

U.S. EPA	Carl Fulper	Advancements and Direction in Needed Equipment (PEMS and PAMS)
Emisense Technologies	Jim Stepan	Characterization of an In-Situ Electrostatic Soot Sensor with Laboratory Measurement Instruments
A & D Technology	Ron Tandy	Real World Emissions Measurements, Based on FTIR Technology
Institute for Transport Studies	Karl Ropkins	Automating PEMS Micro-Trip Analysis

### 2:20–2:40 Break (Poster Discussions)

### 2:40 In-Use Approaches for Advanced Vehicles

U.S. EPA	Carl Fulper	How to develop a Test Program to Achieve Good Results for Advanced Vehicles (Hybrids, Eco Methods, Alternative Fuels, All Electrics, ect...)
University of Vermont	Brian A. Holeman	Real-World Fuel Economy and Particle Number Emissions of a Hybrid-Electric Passenger Car Under Cold Climate
North Carolina State University	Brandon M. Graver	Measurement of Real-World Locomotive Engine Activity and Emissions Using a Portable Emissions Measurement System
So Cal Edison and AVL	Ed Kellogg	In-Use Testing of a Plug-In Hybrid
West Virginia University	David McKain	Natural Gas Vehicles/Methane Response on Standard PEMS Unit with Crankcase Methane Emissions

### 4:30 Panel Discussion – Kent Johnson, Consulting, Regulatory, Industry Representatives

This will be a roundtable discussion on trends, tools, and needs for in-use testing. Topics will include “Discussion on the U.S. in-use compliance program”, “How do we quantify in-use emissions outside of NTE?”, “How do we quantify in-use fuel economy improvements?” and “Is in-use particle number accurate and ready for compliance testing?”

Cummins Inc.	Shirish Shimpi	Senior Technical Advisor, Emissions Development
California Air Resources Board	Sharon Lemieux	Manager, Mobile Source Control Division In-Use Testing Branch
U.S. EPA	Carl Fulper	Chemical Engineer, PEMS Coordinator, Data and Testing Center
European JRC	Francesco Riccobono	Scientist, Institute for Energy and Transport
UC Riverside	Kent Johnson	Research Faculty, Advanced Vehicles and Emissions Research

### 5:30 End of Day 1 Workshop

### 6:30 K1 Go-Kart Racing and Dinner Event (Ontario, CA)