

State of California  
AIR RESOURCES BOARD

**MEASURING EMISSIONS FROM THE ON-ROAD VEHICLE FLEET IN WEST LOS ANGELES**

RESEARCH PROPOSAL

Resolution 18-5

**March 22, 2018**

Agenda Item No.: 18-2-3

WHEREAS, the California Air Resources Board (CARB or Board) has been directed to carry out an effective research program in conjunction with its efforts to combat air pollution, pursuant to Health and Safety Code sections 39700 through 39705;

WHEREAS, a research proposal, number 17RD015, titled "Measuring Emissions from the On-Road Vehicle Fleet in West Los Angeles," has been submitted by University of Denver for a total amount not to exceed \$40,000;

WHEREAS, the Research Division staff has reviewed Proposal Number 17RD015 and finds that in accordance with Health and Safety Code section 39701, the results of this study will allow the Board to evaluate the effectiveness of California's LEV II program in reducing vehicle exhaust emissions; identify the occurrence of high emitters; and shed light on vehicle makes and models that emit significantly above emission certification standards in real-world driving, if they are found; and

WHEREAS, in accordance with Health and Safety Code section 39705, the Research Screening Committee has reviewed and recommends funding the Research Proposal.

NOW, THEREFORE BE IT RESOLVED, that CARB, pursuant to the authority granted by Health and Safety Code section 39700 through 39705, hereby accepts the recommendations of the Research Screening Committee and staff and approves the Research Proposal.

BE IT FURTHER RESOLVED, that the Executive Officer is hereby authorized to initiate administrative procedures and execute all necessary documents and contracts for the Research Proposal as further described in Attachment A, in an amount not to exceed \$40,000.

I hereby certify that the above is a true and correct copy of Resolution 18-5 as adopted by the Air Resources Board.

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Rana McReynolds, Clerk of the Board

**Resolution 18-5**

March 22, 2018

**Identification of Attachments to Board Resolution 18-5**

**Attachment A:**

“Measuring Emissions from the On-Road Vehicle Fleet in West Los Angeles”  
Summary and Budget Summary

## ATTACHMENT A

### “Measuring Emissions from the On-Road Vehicle Fleet in West Los Angeles”

#### **Background**

CARB’s Low-Emission Vehicle II (LEV II) regulation sets more stringent vehicle exhaust emission standards with longer durability requirements than the original LEV I regulation. In order to evaluate the effectiveness of the LEV II regulation in reducing real-world vehicular emissions, and to identify any egregious emission issues in the real world, CARB needs a substantial set of long-term, real-world vehicle emission measurement data. Continued measurements of on-road light-duty vehicle (LDV) exhaust emissions in real-world conditions is a key to monitoring the emissions trends over time and to verifying the effectiveness of the California emission regulations. In California, on-road LDV exhaust emissions have been measured successfully using roadside remote sensing devices (RSDs) at a West Los Angeles location every few years since 1999. This proposed project will conduct another such measurement campaign at the same location in spring 2018.

#### **Objective**

The proposed project will evaluate the effectiveness of California’s LEV II program in reducing vehicle exhaust emissions, identify the occurrence of high emitters, and shed light on vehicle makes and models that emit significantly above emission certification standards in real-world driving, if they are found.

#### **Methods**

The proposed project will use roadside RSDs to measure on-road LDV exhaust emissions of carbon monoxide (CO), hydrocarbons (HCs), nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>), and ammonia (NH<sub>3</sub>). The project will yield fuel-based emission rates in grams of pollutant per kilogram of fuel. The Contractor will conduct a 5-day campaign in spring 2018 to measure LDV exhaust emissions using RSDs at the ramp from southbound South La Brea Avenue to eastbound Interstate 10 in West Los Angeles. The Contractor will use the same instrumentation and methodology as those used in the previous CARB-sponsored measurement campaigns at the same location in 2008, 2013, and 2015.

#### **Expected Results**

The project will yield around 20,000 fuel-based rates of exhaust emissions of CO, HCs, NO, NO<sub>2</sub>, and NH<sub>3</sub> from on-road LDVs measured in spring 2018.

#### **Significance to the Board**

The project will be useful to evaluate the effectiveness of California’s LEV II program in reducing vehicle exhaust emissions, identify the occurrence of high emitters, and shed light on vehicle makes and models that emit significantly above emission certification standards in real-world driving, if they are found.

**Contractor:**  
University of Denver

**Contract Period:**  
24 months

**Principal Investigator (PI):**  
Gary A. Bishop, Ph.D.

**Contract Amount:**  
\$40,000

**Basis for Indirect Cost Rate:**  
The University of Denver (DU) has listed a fully loaded rate.

**Past Experience with this Principal Investigator:**  
The Principal Investigator, Dr. Gary A. Bishop of DU, was one of the inventors of on-road emission remote sensing techniques. Since the late 1980s, he has been involved in many on-road emission measurement studies for mobile sources including LDVs and heavy-duty vehicles. Particularly, in collaboration with the late Dr. Donald H. Stedman of DU, Dr. Bishop has conducted the previous 7 RSD measurement campaigns at the same West Los Angeles location between 1999 and 2015. CARB sponsored the most recent 3 campaigns in 2008, 2013, and 2015.

**Prior Research Division Funding to the University of Denver:**

<b>Year</b>	2017	2016	2015
<b>Funding</b>	\$0	\$0	\$0

## BUDGET SUMMARY

Contractor: University of Denver

### Measuring Emissions from the On-Road Vehicle Fleet in West Los Angeles

Task	Cost
<b>Task 1 – Develop Research Plan</b> - The Contractor shall create a fully developed research plan describing the necessary steps for collecting and analyzing the data for the proposed project.	\$1,638.00
<b>Task 2 - Sampling Campaign</b> - The Contractor shall undertake one sampling campaign in spring of 2018.	\$12,830.00
<b>Task 3 - Analysis and Quarterly Reporting</b> - The Contractor shall use the data collected to extend the historical emission trends measured at the same location, and make attempts to identify any emission anomalies. The Contractor must submit a progress report every quarter, using CARB designated template - Exhibit A, Attachment 2 – Progress Report Template.	\$13,006.00
<b>Task 4 - Draft and Final Reports</b> - An initial draft final report and a final report shall be prepared by the Contractor and submitted to CARB and to outside reviewers selected by CARB for review and comment.	\$12,526.00
<b>Total Cost Offer</b>	\$40,000.00